Det. Bel Isle & Windsor Ferry Co 63

THE MARINE RECORD

DEVOTED TO NAVIGATION, COMMERCE, ENGINEERING AND SCIENCE.

VOL. XI. NO. 4. CLEVELAND, O., JANUARY 24. 1889. $2.00 PER ANNUM SINGLE COPIES 5 CENTS

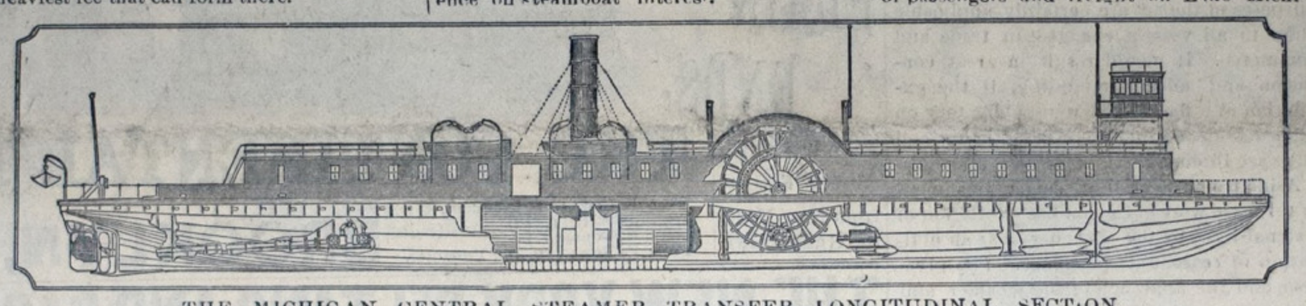
STEEL FERRY STEAMER TRANSFER.

Our illustration represents the new ferry steamer built by the Cleveland Shipbuilding Company for the Michigan Central Railroad Company, to ply between Detroit, Mich., and Windsor, Canada, making connection between the Canada Southern railroad and the Michigan Central. This ferry is 280 feet long over all, 45 feet 6 inches breadth of hull, 74 feet 6 inches across the guards, 17 feet 3 inches deep; built entirely of steel, except the cabins for crew, which are located on the guards, leaving a clear deck which will take three tracks, each track accommodating seven freight cars. When light with fuel on board, she will draw 9 feet forward, 10 feet aft; with 21 loaded cars her draught will be about 11 feet forward, 12 feet aft. The pilot house is located on a bridge 19 feet above the main deck and near the bow. Her bow is of the most approved form for breaking through the heaviest ice, having a vertical section like a sled runner, and the regular scantlings of the ship increased in weight, and re-enforced with extra keelsons and bulkheads to give necessary strength. The hull is covered with a steel deck. The Transfer has collision bulkhead forward, and bulkheads between the store room and engine room; between engine room and boiler room; between boiler room and after engine room; and one at inboard end of stern pipe. The forward and after bulkheads are water tight, which entirely relieves the vessel from danger of sinking by contact with heavy ice, and all contribute to the stiffness and strength of the hull. Between bulkheads belt frames occur on every sixth frame, except for 60 feet in wake of paddle wheels, where they occur on every other frame, experience having proven that unusual strength is necessary for boats in this place.

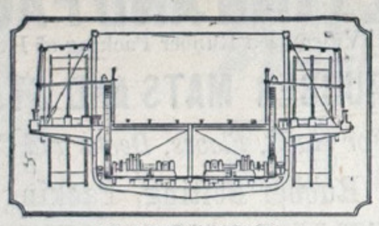
She is propelled by paddle wheels located forward of center of length on each side, 27 feet 6 inches in diameter, with wooden arms and buckets all heavily cased in steel. Aggregate weight of each wheel sixty-six tons. And a 9 feet 6 inch propeller wheel in the stern, especially designed for breaking heavy ice. Each side wheel is driven by a pair of high pressure engines, geared at right angles to each other, with cylinders 28 inches diameter, 48 inch stroke. Engine shafts are geared to paddle wheel shafts by cast steel pinions 5 feet 4 inches diameter, working in spur gears on wheel shafts 16 feet diameter, 5⅝ inch pitch. These spur gears are built of cast iron centers and arms in two pieces, and twelve cast steel segments composing the rim, all carefully bolted, fitted and keyed together. The gears are machine cut, and as now finished give assurance of great strength and durability. The propeller in the stern is driven by a pair of engines at right angles. The cylinders 28 inches diameter, 30 inches stroke, are laid horizontal, with separate air pumps and condenser. The screw shaft is 10 inches diameter and 52 feet long, and is greatly inclined as the propeller wheel projects 12 inches below the hull proper, being protected by a solid forged skag, which carries the bottom pintle of a solid forged rudder. To protect the rudder when backing into solid ice, there is a heave forging framed into the hull, immedfately above the rudder, extending down to the top line of the rudder. The forging is covered by the outside plating of the hull, and when backing into heavy ice the rudder is put amidship and a heavy bolt inserted through the forging into the rudder frame from the deck, thereby holding the rudder rigidly in a fore and aft direction. The after end of this forging extends down over the after corner of the rudder to prevent ice being driven between the rudder and horn.

In the forward engine room is located a beam engine; steam cylinder 16 inches diamater, 36 inches stroke, driving two air pumps and four bilge pumps, the center column of this beam engine forming a jet condenser, common to both side wheel engines.

About the center of the vessel are located four marine, return flue boilers of the rectangular fire box pattern, 11 feet 6 inches in diameter, 16 feet long, and carrying a working pressure of 90 pounds. Aggregate grate surface, 252 square feet, and 9828 square feet heating surface. Along the center line of the ship, between boilers, are two steam drums connected to a steam separator. The smoke connections are carried to the side of the hull where they terminate in smoke stacks, one on each side. Coal bunkers are located amidships, between boilers, extending full length of boiler room. Every room and compartment of the hull and paddle houses are supplied with coils of pipe for steam heating. On account of the great difficulty of getting water when working in ice, this vessel is provided with ten sea cocks, located in different parts of the ship. In the engine room is a Reynolds patent heater 42 inches in diameter, and 10 feet high; also three pairs of duplex steam pumps for fire purposes, feeding boilers, washing decks, pumping bilges, etc; and on deck four powerful capstans from the American Ship Windlass Co., of Providence, R. I. This is probably the heaviest steel vessel ever built on the great lakes, and both owners and builders feel confident that she will be able to transfer cars across the Detroit river in the severest weather, breaking the heaviest ice that can form there.



THE MICHIGAN CENTRAL STEAMER TRANSFER—LONGITUDINAL SECTION.



QUARTER SECTION.

REVENUE CUTTER SERVICE.

To the Editor of the Marine Record.

ERIE, PA. January 20.

In the matter of the revenue cutter "Commodore Perry," permit me to say. She was not at anchor, but moored to a dock, so tight that the raise of water lifted the spiles out of the dock and she was adrift, and consequently was picked up by the dock to leeward. The administration of the revenue cutter service is of a penurious character, in keeping with old time Democratic theories of revenue for expense only, and very little at that. With overflowing vaults and protracted legislation on revenue reform, there is a seeming cussedness in the fact that a proper expenditure for dock and storehouse can not be made, whether they be located in Cleveland or Erie, is immeterial to the writer, only I fear Cleveland can't offer inducements to outweigh the certain advantages of location possessed in this harbor of Presque Isle. A. J. S.

AT THE annual meeting of the Lake Carriers' Association, held in Cleveland yesterday, the subject of harbor improvements was dealt with in a most complete and exhaustive manner by the members of that important marine association, and a resolution was adopted stating that an increase of harbor facilities at this port would be very desirable, and recommending the vessel owners association to take such action as would insure this result. There can be no doubt in the mind of any one acquainted with the large commerce frequenting this port, that an improvement in the approach and interior of this harbor is absolutely necessary, and the sooner measures are taken to obtain this end the better for the general trade and prosperity of the city.

AROUND THE LAKES.

CLEVELAND, OHIO.

Captain Henry Peterson and wife, of Huron, O., were in the city yesterday.

W. Livingston, Jr., of Detroit, was in the city yesterday, attending the Lake Carrier's annual meeting.

Mr. J. E. Lockwood, of Milan O., who is having a steamboat built at Quayle's yard, was in the city yesterday.

Mr. Tyler has been in Chicago the past few days putting one of his purifiers into the steamer Sarah E. Sheldon, Superior, and Anna Durr.

Charles Champness, boatbuilder, of Main street, has taken an order to build six skiffs, ten clinkers, and six yawl boats and is figuring closely on other work.

Mr. Millen's scheme for bridging the Detroit river cannot possibly materialize. All marine men know that Captain Millen is interested in railroad enterprises, and that what he advocates will work good to railroad company and have a derogatory influence on steamboat interest.

Captain L. C. Cole, who has sailed the schooner Guiding Star for the past eight seasons, will again take charge of her on the opening of navigation.

Mr. W. W. Tyler, chief engineer of the Gooderich line, has been absent the past week overlooking the Fred Kelley, and has decided that the work that must be done will require the attention of boiler makers, and machinists.

Captain Carlton Graves has sold the schooner Columbia to Captain Loftus Gray for $7,000. Captain Gray will sail her. Captain Graves intends purchasing an interest in a steamboat and has papers that will permit him to sail her.

Captain John Cassidy, whose vessel, the Trenton, was tied up by the Canadian authorities for some imaginary infringments on the customs laws, will probably soon be released, as Honorable M. A. Forau has taken the matter in charge.

James Carey Evans, the treasurer of the Lake Carrier's Association, was in the city yesterday, attending the meeting of the association in his official capacity. Mr. Evans left for Buffalo immediately after the business of the meeting was over.

Services are conducted at the floating bethel and city mission chapel, by chaplain J. D Jones, on Sundays at 10:30 a. m., and at 4 p. m. Prayer meetings Wednesday, and Friday evenings at 7:30 p. m. All seafaring men are respectfully invited to attend, and the most courteous treatment is assured at all times.

Captain Moran formerly of the passenger steamer Mary, is in the city on a visit. In conversation the captain mentioned the increase in speed of the boat in consequence of having her coil boiler taken out, and replacing it with a shell boiler built by Thomas McGregor, of the Central Boiler Works, Detroit.

Mr. Harry Murphy, secretary of the Lake Carrier's Association, was in the city yesterday attending to the duties of his office. We regret that his individual duties in Buffalo have caused his resignation as secratary of this important interest to the aids of lake navigation, but in the person of Mr. Frederick Almy we hope to find an official who will be equally vigorous in administering the duties of the secretary of the Lake Carrier's Association.

This office is in receipt of a large, useful almanac from the iron and steel warehouse of Messrs Basset, Pressly & Train. We feel flattered at the kindly spirit which our late patrons evince toward us. We promise to pay daily attention to their fine clear calender and trust that our thanks will be accepted for the useful gift.

Captain P. Peterson, of Green Bay, Wis., has been in the city for the past week. While he has been here the captain has sold his schooner, the F. A. Georger, to Duffey & Rourke for $30,000. Her net tonnage is 784, classed A2, and valued by Inland Lloyd's at $32,000. The sale of vessel property has been rather above than below their classified valuation, and the purchasers of the F. A. Georger ought to be perfectly satisfied with their deal.

We are indebted to the kindness of Thomas G. Butlin president and superintendent of the Goodrich transportation company, for a season pass on this fine line of Lake Michigan steamers. We trust that the Goodrich transportation company will have a more successful season in the conveyance of passengers and freight on Lake Michigan, than ever they have had in any previous season, and their competent staff of officers go far to insure this result. The names of the officers are as follows: Thomas G. Butlin, president and superintendent; E. L. Lupton, vice presidennt, G. Hurson, secretary and treasurer; John Singleton, general passenger agent. Office and docks are at the foot of Michigan street, Chciago.

The annual meeting of the Marine engineer's beneficial association held at Heard's hall, on Euclid avenue, was one of the most enjoyable parties of the season, under the able management as noted in the MARINE RECORD last week. Every one who participated was well pleased. The supper, furnished by the committe, was elegant; dainty, positive, and the most enjoyable that a party of dancers ever sat down to. Engineer Meade, who had charge of the receipts at the door, reported four hundred people present. Many ladies knowing that the parties of this association are the events of the season, appeared alongside their sisters of beauty. We care not so much for the menu of the dining hall, as we do for the beauty, grace, and elegane that we foumd in the dancing hall. We saw there girls of all ages, and the characteristics lead us to think that hey have been bred with equal wealth. The party given last evening was one of the most enjoyable of the season, and far surpassed any previous one given by the Marine engineer's beneficial association.

The first ball given by the Brotherhood of the lake marine engineers association at Rhodes' hall, was elegant in every respect. The fact that this new organization is rapidly coming to the front, we may say, isqualified by the presence of the company who appeared on the floor. Perhaps fully 150 couples joined, with the music in tripping the fantastic toe. While we met many of our old friends in this new organization, and many of our old friends in the old, we could not but think that American principles, as regards man's action is right. We have noticed that in the fraternity existing between marine engineers, that all things count. That is, if an engineer is in danger his life goes for nothing when computed against the life of the passengers. It has been an old saying that the officers of a steamboat must sacrifice their lives in the interest of those under their charge. No one can possibly find a number of men who are more devoted to the responsibilities of their calling than lake marine engineers. We are glad to note the calibre of the officers newly elected to the Brotherhood, and think that under their administration the organization will grow in wisdom, efficiency, and repute, and we hope to live to see the day when many annuals of the nature described above will be repeated. The Brotherhood of the lake marine engineers have our best wsshes for future prosperity afloat and ashore.

CHICAGO, ILL.

Special to the Marine Record.

P. H. Fleming & Co., vessel agents, sold the steambarge Michael Groh for Campbell & Cook, Michigan City, to Harlow Brothers Tolodo, O. Consideration, $12,000.

P. C. Fleming, vessel agent, has returned from his journey east. He has been appointed agent for the Rotterdam route which will enable him to send grain from Chicago through to Buffalo, thence through the Erie canal to Rotardam, N. Y., thence by the Fitchburg railroad to New England and Boston.

Captain A. L. Fitch, of the firm of P. H. Fleming & Co., vessel agents, has gone east and will return in two weeks.

Captain Wily M. Egan is away east on business.

Captain C. W. Elphike went east on Monday, on business.

L. Sullivan, vessel owner of Toledo, and Captain Winchester, of the schooner Maumee Valley were here on Tuesday.

The schooner Emma C. Hutchinson is receiving new ceiling. Captain Place is superintending the work.

Captain Mack of the propeller Ballentine stopped off at Chicago Monday on his return from Milwaukee, where, it is reported, he purchased the schooner Moonlight.

C. Larson is building for C. P. Willard & Co., three steam launches, one 33 feet long, 7 feet beam, 3 feet molded depth; one 33 feet long, 7 feet 6 inches beam, 3 feet 6 inches molded depth; one 33 feet long 8 feet beam, 5 feet molded depth.

Captain L. Olson is giving the steambarge M. F. Butters, part new deck beams and new deck 4 by 4, part new hatch coombings and a general overhauling.

At the Chicago dry dock company's the steambarge M. C. Neff was in dock for new main and bilge keelsons, new wheel, straightening shaft, recalking bottom and topsides. The schooner Ellen Williams for some calking, tug Morford for new push bearing, and overhauling, the tug A. S. Allen for some new outside and plank and calking.

At Miller Bros., shipyard the steamship Tacoma is in dock. She has received a new bucket on her wheel, had her shaft straightened, a new stern pipe, and bottom calked. The barge Noquebay is in dock. She has received considerable new plank on her bottom and a general overhauling. The tug Belle Chase is in dock to have her machinery taken out, which will be placed in a new hull. The barge Active is receiving a new deck, the schooner Nicholson is receiving new hatch cambings, the barge Golden Age a new floor, the steamship John Emery Owen had her ceiling calked, the steamship Portage had her topsides calked, the steamship Avon some general repairs and overhauling, the schooner Michigan is at the derrick to receive three new masts.

The firm of D. C. Deegan, and Captain Joe Wilson vessel supplymen, dissolved partnership on December 24th. Captain Joe's friends will be sorry to learn that he came out a considerable loser.

Captain George Robertson, of the steambarge Alice M. Gill, was in this city from Grand Harbor, Wednesday on business.

Captain Disher is getting lots of work done on the propeller Fayette. She is receiving new deck frames and deck, new stanchions, new bulwarks inside and out, new stern, new cabin att 50 by 21 feet, fore cabin remodeled and recalked all over. Every piece of bad timber and plank has been replaced by new, and when completed she will be good as new. WILLIAMS.

MARITIME LAW.

COLLISION—HUDSON RIVER—NIGHT—STEAMER OVERTAKING SCHOONER—LOOKOUT—FLASHLIGHT—APPORTIONMENT.

U. S. District Court, Southern District of New York.

The steamer Saratoga was going down the Hudson River at the rate of 14 knots in a place where the channel is not over 700 or 800 feet wide and on a night which was not intensely dark. A schooner was beating down the river ahead of the steamer and perceived the latter when a mile distant and saw that she was being rapidly overtaken, and knew that her lights were not visible to the steamer. A collision occurred, for which both vessels were held in fault; the steamer, because she should have seen the schooner at least 500 feet away and in time to have avoided her, if her lookout had been sufficiently vigilant; the schooner, because, under the circumstances, she should not have failed to exhibit to the steamer a flash light.

BROWN, J.

On the night of August 15th, 1885, as the libellant's schooner, L. Holbrook, loaded with a cargo of brick, was beating down the Hudson river in a light wind, the tide being ebb, she was run into by the passenger steamboat Saratoga, on her way from Troy to New York. The place of collision was in about mid-channel, nearly opposite Catskill Point, where the available channel way was only some 700 or 800 feet wide. The wind, as admitted in the pleadings was about S. S. E., and the schooner was on her starboard tack. She must have been heading, therefore, nearly directly across the river, or possibly, one point down river; not enough to shut out her red light completely when on her course. She was struck on the port side near the main rigging, and sank almost immediately under the stern of the Saratoga.

The claimants contend that the night was so dark that it was impossible for the pilot of the steamer to see the Holbrook, until they were close upon her; within 50 feet as her witnesses allege. The steamer was going at the rate of about 14 knots through the water; the schooner about 1½. The lights of the steamer were seen on board the schooner when she was over a mile distant. No flash light was exhibited from the schooner. On the schooners previous tack, her port tack her head was undoubtedly pointed so much down river, that her green light was not visible to the steamer behind; and the steamer, being then upon a bend in the river, showed her red light only. The schooner was on the port tack probably about five minutes. She began to come about from her port to her starboard tack probably three or four minutes before the collision; but as the wind was light, she would be slow in coming around and filing away. When she got filed away on the starboard tack, her red light would not, probably, have come into view to the steamer more than a minute or a half minute before the collision. When she last tacked the two colored lights of the steamer were visible, estimated about a half mile distant. The claimants contend that a good lookout was kept on the steamer, and that no lights at all on the steamer were seen, or were at any time visible. This would be so, if the schooner on her starboard tack headed two points down river. But upon the admitted direction of the wind, it is not probable that she headed down so much.

The libellants contend that the night was not dark; that the collision was about 15 minutes before the setting of the moon; that though the sky was somewhat obscured, the stars were visible overhead; and that the hulls and sails of vessels could be seen without a light at least half a mile distant. Some witnesses say that the moon was still visible. Numerous witnesses sustain each side on this point.

I am not satisfied that the night was as dark as contended for by the claimants. There is no doubt that the time of collision is accurately fixed at very near 11:35 p. m. This was at least 20 minutes before the moon had set. Whether the moon had at the time sunk behind the western hills or not, its light would not be wholly lost. There was no fog; the clouds were not thick, and were at least broken in places. The large passenger steamer Dean Richmond passed by at one a. m. her pilot and wheelsman saw the schooner's mast and sails projecting above water when about five hundred feet distant. She lay a little to the eastward of the Richmond's usual course. The latter, however, veered about a half point to the westward and passed the wreck about 150 feet off. Naturally it would have been darker then than at the time of collision before the moon had set. Whether, therefore, the schooner's red light was exposed to view or not, it is more probable that the schooner, or her light, if visible, was not seen through some momentary inattention of the lookout during the minute or half minute before collision, than that the darkness was so dense that she could not be seen at all until within 50 feet of her, as the claimants allege. In a half minute the Saratoga traveled about 700 feet. If the night was as dark as the claimants allege, the high speed of the Saratoga in so narraw a channel and where other vessels were to be expected was unjustifiable. The Batavier, 9 Moore, P. C. 286. The Colorado, 91 U. S. 692, 703. I think, however, the schooner could have been seen at least 500 feet distant, and probably much further off than that. Had she been seen at that distance, as the Richmond saw her, there was ample time to change a point to the westward; and half that change would have avoided the schooner. In so narrow a channel way, where vessels were likely to be beating down, with the steamer going at such speed, and when the lights of sail vessels beating downward would be mostly, if not wholly obscured, the vigilance of the lookout ought to be proportionate to the danger, much stricter, therefore, than in the open sea where vessels are few, as in the Algeirs, 21 Fed. Rep. 343. I cannot believe that if this schooner had been seen even 300 feet away, as she ought to have been, the steamer would not have been able easily to go astern of her by porting her helm. The libellant, indeed, contends that the schooner was seen, and that the steamer's helm was starboarded, and that she attempted to cross ahead of the schooner. But this rests chiefly on the steamer's head swinging to the eastward after the collision, and the appearance of the red light just before collision, and the near approach of the steamer would cause the latter change in light to an observer on the after part of the steamer. But as the officers in charge deny any change of helm, I accept their account of the matter in that respect, though not without some doubt, as the steamer had just before been under a starboard helm in coming around the long bend.

2. The libelant's schooner I must hold to have been equally to blame for showing no signal to the approaching steamer. Her lights were seen some time before; first her red light a mile off, afterwards both colored lights, making directly for the schooner, when nearly a half mile distant. She must have known that her own colored lights, on her previous tack and on coming about were not visible. There was special need, therefore, of some signal to apprize the steamer of the schooners's presence. In the case of the Excelsior (12 Fed. Rep. 203) the failure to exhibit a flash light in the North river under section 4234 of the Rev. Stat. was held to be a fault contributing to the collision. The libelant contends that the section applies only to sailing vessels of which the collector or general officers of the customs have jurisdiction. The language of the section says "all sailing vessels." The purposes of the act are certainly applicable alike to all vessels engaged in trade and commerce. It would result in great confusion and misunderstanding, if the exhibition of a flash light were obligatory on some vessels, and not on others. I think all alike are intended.

Aside from the statute, the circumstances in this case were such that the exhibition of a signal light by the schooner was an obligation of reasonable prudence. The presence and the approach of the steamer and her great speed, as one of the usual passenger steamers, were known; the channel way was narrow; and the fact that that schooner's colored lights for several minutes previous had not been visible and certainly up to within two minutes of collision were not visible, when it was clearly time that the steamer ought to be apprised of the schooner's presence ahead, made it obligatory on the schooner to show some signal. The signal lantern was at hand and could have been used easily. The situation was, therefore, one of manifest danger, before the schooner's red light could have come into view. The obligation of vessels whose colored lights are obscured to make known their presence seasonably to another vessel behind in circumstances of danger, has been frequently adjudged. The Oder, 13 Fed. Rep. 272; the state of Alabama, 17 do., 855, 856; Erastus Corning, 25 do., 574; the Anglo-Indian, 3 Asp. Mar. C. 1. 4; S. C. 33 Law T. (N. S.) 233, 235. The flash or globe light which she had at hand manifestly ought to have been exhibited to the steamer as early as the time of the schooner's last tacking, and continued at least until her own red light should be clearly shown to the steamer. Had this been done there can be no doubt it would have been seen on the steamer and the collision avoided. The omission of the light was, therefore, a fault contributing to the collision. This fault of the schooner did not, however, excuse the steamer for inattention of the lookout in the special circumstances above noted.

The damages must, therefore, be divided.
December 15, 1888.

THE SHORTEST DAY.

While December 21 is, by a sort of common consent, reckoned the shortest day in the year—that is, between sun-up and sundown—it is not so in strict fact. The 22nd will be precisely the same in shortness, for while sunset is one minute later on that day, sunrise is also a minute later, leaving things even at the close. But on the 23rd there is a setback, for while the sun sets on that day one minute later than on the 21st, sunrise is two minutes later, leaving the 23rd the champion short day by one minute. After the 23rd there is a sort of wobble for several days until about the 25th or 26th, when the process of lengthening the days really begins.

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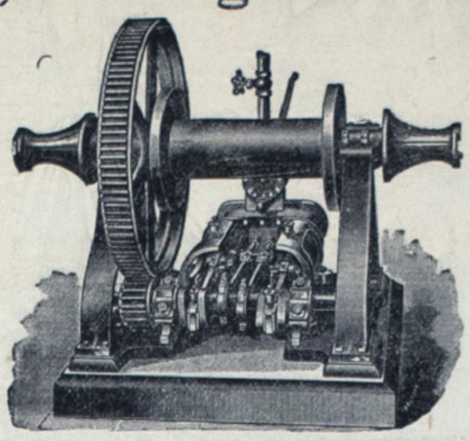
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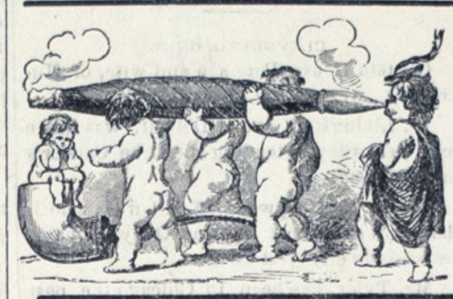
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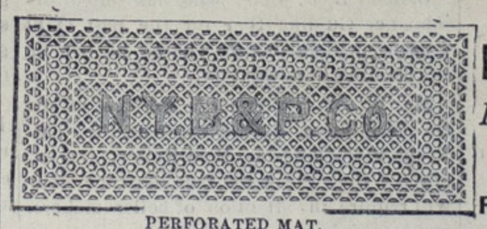

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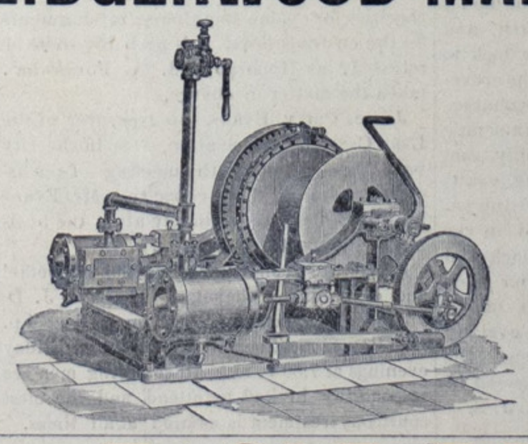
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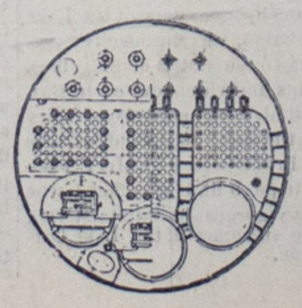
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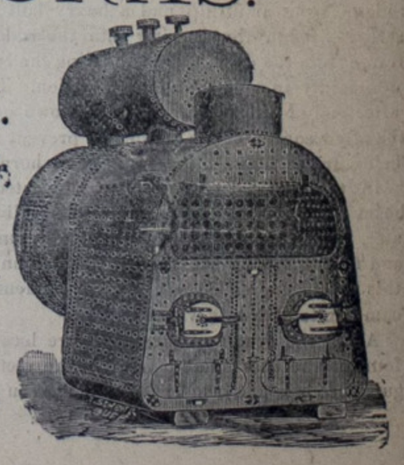

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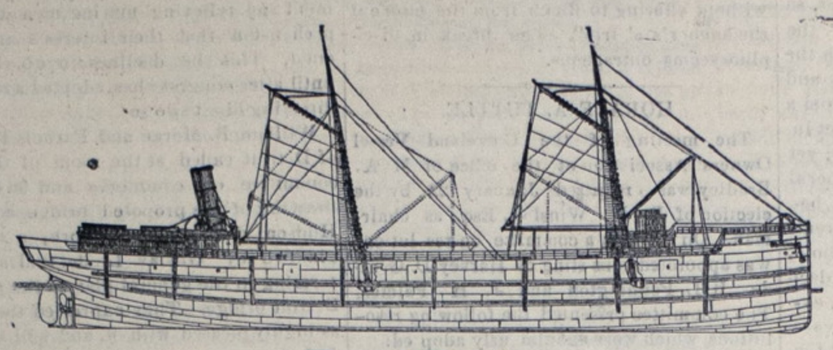

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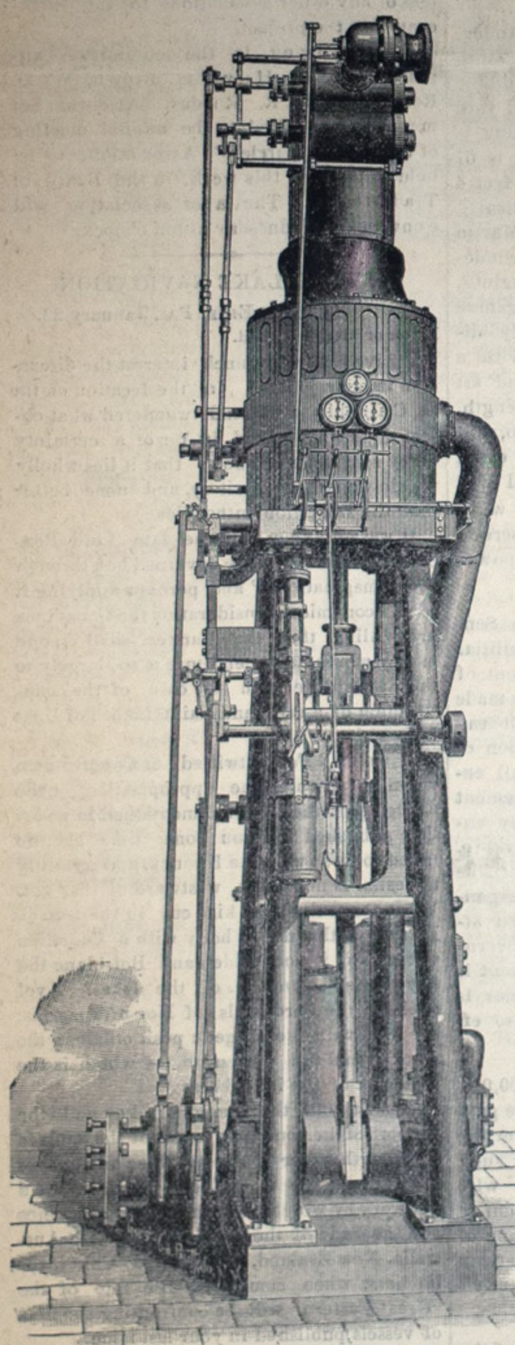

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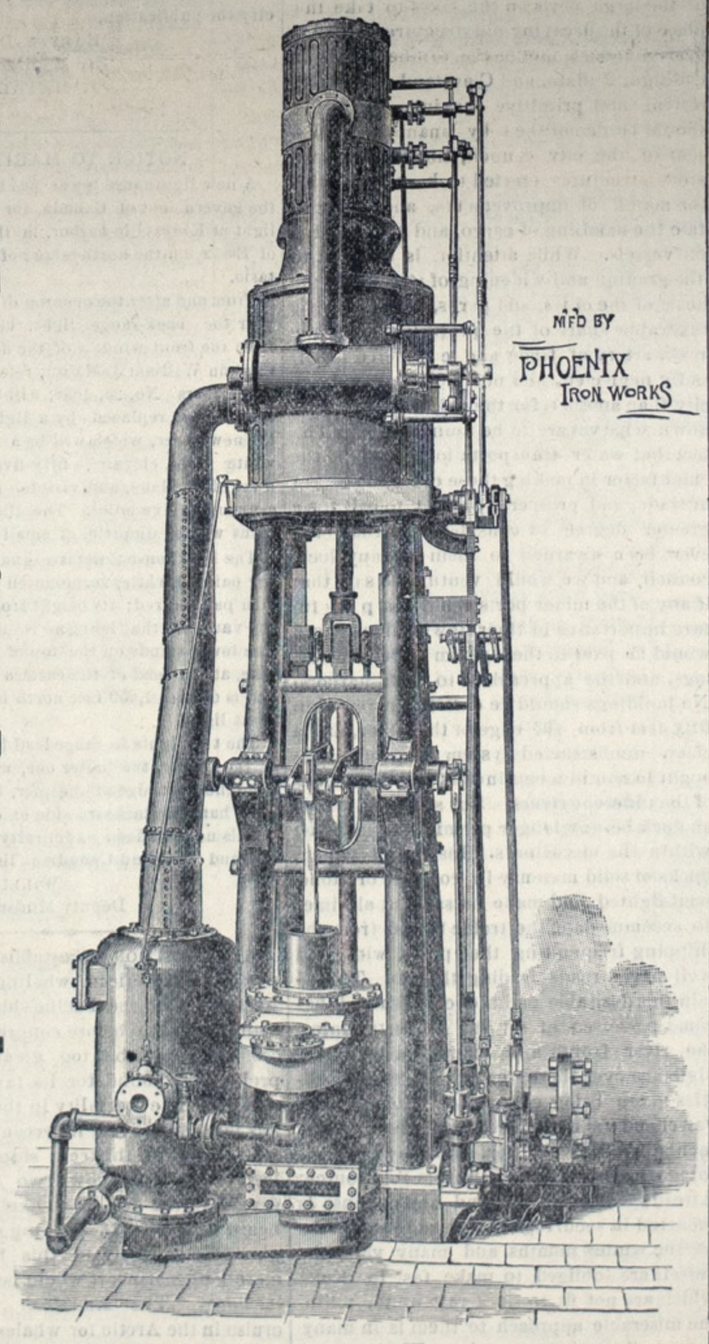

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Subscribers and others are respectfully invited to use the columns of the MARINE RECORD for the discussion of pertinent topics.

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MARINE RECORD—OFFICIAL PAPER.

TONNAGE.

The word ton seems to have been derived more from the measure of liquid capacity than the unit of ship measurement, the word originally indicating a wooden vessel of the shape of a cask, used for the storage and transport of wine, and it is more than probable that the tun became the unit of measure for the ship from the fact that from an early period it was the custom of the government to charge import duties and charges on wine were levied upon it The *Nautical Magazine* which Mr. Hall, who quotes original documents of an early date in connection with the revenues in England, says: "Out of every cargo of ten tuns, or above ten tuns and under twenty tuns, one tun to be purchased by the king at his own price. Above twenty tuns two tuns to be so purveyed, and no more, irrespective of the bulk of the cargo. A further regulation prescribing that one tun should be taken from before the mast, and one behind it, points to the fact that the vessels of those times had but one mast and were not decked midships, hence the best practical measure of the size of ship would be the number of tun casks which would go into her hold. So far the word tonnage had no connection with the size of the ship, but a certain connection between tunnage imports and shipping is shown by the fact that sometimes when a subsidy of tunnage was voted to the king it was specified that it was to be applied to the sea defenses of the kingdom. As early as 1379 the French exacted from the British tonnage dues, and Richard II ordered duties to be levied upon vessels outward and homeward and that this was upon vessels and not upon cargoes is proved by the fact that fishing vessels were to pay a certain sum while employed in fishing.

However, as trade and commerce increased a definite mode of measuring had necessarily to be established, and the several methods here enumerated have been devised and practiced at various times. A shipwright and mariner named William Sutherland published a work in 1711 in which is stated two good old ways for finding the tonnage of a ship: first to multiply the length of the keel by the length of the midship beam, and also by one-half of the length of the beam, and to divide by ninety-four; the second rule is to take the length of the keel, breadth of the beam, and depth of the hold, multiplying them together and dividing by ninety-five to give the true burden for merchant ships, a method which at the present day and according to the models which are now put afloat would not only be erroneous but ruinous to ship owners. Monsou, Bushnell and others have determined a system in the past equally faulty. Sterling's rule for finding the contents of a curved body seems the more correct, and forms the basis of all the present rules for tonnage and displacement.

However, the subject of register tonnage is a wide one, and as the model affects the stability, bearing, etc., of a ship, so will the mode of measuring be required to differ, so as to meet the exact necessities of the different shaped hulls. A table which the writer has had for a number of years and which has apparently been copied from a work on the subject is certainly correct in some instances, and has been proven so; yet we do not vouch for its accuracy in general measurements. Multiply the length between the perpendiculars by the extreme breadth, and this again by the depth of hold, then multiply by one of the following decimals: for yachts under sixty tons .5, exceeding sixty tons .45, for a full built vessel .7, medium .66, sharp built .62, a high speed steamer .58. This result, divided by ninety-four, will give the approximate tonnage under deck, and to obtain the approximate total register tonnage add to the foregoing the space taken up by the deckhouses by multiplying together the length, breadth and depth of each and divide by one hundred, the quotient will be the tonnage. Quoting from the same source we are informed that the cubic contents, multiplied by five, will give the amount of lumber that can be stowed in the hold of a vessel, five being a practical constant. Again, to ascertain the approximate dead weight of a cargo in tons, that a ship can carry in safety, multiply the tonnage under deck by 1 5, adding 10 per cent for inland and coasting voyages. For measurement cargo at forty cubic feet to the ton, multiply the register tonnage by 1 9, the product will be the approximate dead weight the ship will carry. These rules certainly have the advantage of being simple.

DOCKS AND PIERS.

A more suitable and commodious system of docks and piers ought to be built in all of the large ports on the lakes to take the place of the decaying old structures which at present adorn the banks of the rivers in Chicago, Buffalo, and Cleveland. The old, rotten, and primitive looking structures should be demolished by unanimous consent of the city council, and solid, clean stone structures erected to keep pace with the march of improvements, and to facilitate the handling of cargo, and the mooring of vessels. While attention is directed to the grading and widening of streets, in the heart of the cities, and parks, etc., receive a favorable share of the people's wealth, the main artery of trade and commerce is left sadly neglected, and not more in one large city than another, for the old, rotten, tumble down wharves are to be found in each. The fact that water transportation has been the chief factor in making those cities the center of trade, and prosperity, ought to call for a greater degree of consideration than has ever been awarded to them by any local council, and we would venture to say that if any of the minor ports could grasp the future importance of their towns, due regard would be paid to the system of dock buildings, and the approaches to their harbors. No buildings should be erected nearer than fifty feet from the edge of the river, and a clear, unobstructed system of good docks ought to run in a continuous line both sides of the different rivers. Nor should a wooden dock be any longer permissible, at least within the city limits. Instead of which, docks of solid masonry in concrete or stone, well lighted, and made passable at all times to accommodate the traffic to and from the shipping frequenting the ports, with good well paved roads leading thereto. To obtain this desirable end the cities should become possessed of all the property lining the river fronts and exercise a thorough vigilance over the waterway, the extra facilities given being charged as a toll on each vessel and vested interest until the improvements had been paid for, and the city could forego the revenue derived from this source. Already difficulty is found and expense is incurred in securing suitable and safe berths for the winter months, and many valuable vessels are obliged to make fast to docks which are not fit to tie a raft up to, while the miserable approach to them is in many cases a disgrace to any city. We have on other occasions called attention to the increasing demand for better dock, and river frontage conveniences, and we shall keep hammering this subject from time to time until action is taken by the municipal authorities to remedy the present evils, and and bring about a system of docks and wharves which will no longer be a disgrace to a large and important centre of civilization.

HAYTI SAMOA.

It is stated that no less than five petty officers of the U. S. war steamer Atlanta, which sailed for Hayti last Sunday, deserted, and one resigned because of dread of the yellow fever. If these reports are true there must be a large amount of cowardice, as well as grit in our naval circles, and the sooner the cowardly element is drawn from the service the better. The idea of officers drawing pay while there is no risk and resigning and deserting their ships when required for duty must seem the very extreme of cowardice in the eyes of the people unacquainted with marine matters; while to those who know that a seaman should be (as the old lines say) "All as one as a piece of the ship, and with her brave the world without offering to flinch from the moment the anchor's a' trip". The break in discipline seems outrageous.

HORACE A. TUTTLE.

The meeting of the Cleveland Vessel Owners' Association at the office of M A. Bradley was organized January 22 by the election of R. K. Winslow, Esq., as chairman. On motion a committe on resolutions was appointed consisting of Harvey D. Goulder, B. L. Pennington, and J. H. Palmer. The committee prssented the following resolutions, which were unanimously adopted:

WHEREAS, The members of this association have learned with profound sorrow of the death of Horace A. Tuttle, for so many years closely and prominently identified with the iron ore carrying trade on the lakes; and

WHEREAS, During his business career in this city his conduct was so honorable, his treatment of business associates so affable and courteous, that we are desirous, as individuals and as an association, of giving expression to our appreciation of his kindness of heart and also wish to signify our recognition of his integrity and high sense of honor, as well as his ability and efficiency in business and his worth as a citizen;

Resolved, That in the death of Horace A. Tuttle the business community of Northern Ohio has suffered a great loss, the city of Cleveland has lost a valued citizen, and his immediate neighbors and personal friends a worthy and genial companion.

Resolved, That we extend to the family of the deceased our sympathy in this their hour of sorrow; that, as a mark of respect to his memory, we will attend his funeral in a body; that the secretary be directed to transmit to the family a copy of these resolutions, to engross the same on the records of the association, and to furnish copies of the same to the press of the city for publication.

HARVEY D. GOULDER,
B. L. PENNINGTON,
J. H. PALMER,
Committee.

NOTICE TO MARINERS.

A new lighthouse tower has been erected by the government of Canada, for the back range light at Kingsville harbor, in the South Riding of Essex, on the north shore of Lake Erie, Ontario.

From and after the opening of navigation next year the back range light, heretofore shown from the front window of the dwelling house of Captain William J. Malott, referred to in notice to mariners No. 28, 1888, will be discontinued, and will be replaced by a light shown from the new tower, which will be a fixed bright or white light, elevated fifty-five feet above the level of the lake, and visible from all points seaward twelve miles. The illuminating apparatus will be dioptric, of small size.

The lighthouse tower is a square wooden building painted white, surmounted by an iron lantern painted red; its height from the ground to the vane on the lantern is twenty-nine feet. The tower stands on the top of the bank of the lake, at the head of the eastern backwater pier, and is distant 1,050 feet north by west from the front light.

The two lights in range lead into the entrance of the harbor, the outer one, which is ten feet from the west edge of the pier, being left on the right hand or starboard side on entering.

This notice affects admiralty charts Nos. 332 490, and 678, and Canadian list of lights No. 206a.

WILLIAM SMITH,
Deputy Minister of Marine.

A PROPOSITION to establish a harbor of refuge for American whaling ships in the Arctic seas on the Pacific side of the continent, is to come before congress, and if the cost should not be too great, reason will probably be found for its favorable consideration. The mortality in the whaling fleet has been very great in recent years. One year a fleet of thirteen ships was totally lost. There are now two ships missing, caught in the ice, and likely never to be heard of more. If anything can be done to give greater safety to this branch of the merchant marine, it would be well to have it done. The American vessels which cruise in the Arctic for whales every season represent an investment of $2,500,000, and carry several hundred men.

DIRECTOR Swift, of the Warner observatory, received notice of the discovery of a new comet by Professor Brooks, at Smith observatory, Geneva. Its position is as follows: Right ascension, 18 hours 4 minutes; declination south, 21 degrees 20 minutes, with a rapid westerly motion. The comet was faintish.

SECRETARY OF WAR'S APPROVAL OF THE DETROIT BRIDGE.

The secretary of war in passing upon certain provisions of the Detroit bridge bill gives the measure his approval, so far as their relations to his office are concerned, but stipulates that future plans and specifications based upon the same shall be submitted to him for further consideration. An effort has been made by representatives of the Long Span Bridge Co., an organization whose corporate existance does not seem to be established anywhere, although it is represented in the bill that it exists "under the laws of the state of Michigan", to induce the secretary to at once create a commission to go to Detroit and give a public hearing with a view of ascertaining public sentiment and relieving marine men of the apprehension that their interests are threatened. This he declines to do, however, until after congress has adopted a resolution directing him to do so.

William B. Moran and Farncis F. Palms of Detroit called at the room of the house committee on commerce and inspected a drawing of the proposed bridge across the Hudson river at New York, a structure planned by Gustav Lindenthal and conforming in the general plan to the proposed Detroit bridge. They expressed themselves as highly pleased with it, and will use their influence to further the project. They left for New York to night but will return on Tuesday, so as to be present at the hearing before the committee on the following day. "The opposition to the bridge," said Mr. Moran, " will come from Cleveland and Buffalo, but our people in Detroit will not object when they are fully informed in regard to what is contemplated. Why, the middle span of the Hudson river bridge is 500 feet longer than our whole bridge would be between the present banks of the Detroit river. How any one can imagine that it will be any obstruction to commerce if built in accordance with the proposed plans is a mystery to me."

STURGEON BAY CANAL.

We have frequently been asked for the dimensions of the Sturgeon Bay Canal, and Captain Hewitt, who has great knowledge of those waters, kindly furnishes us with the following dimensions: width. 100 feet; depth, 15 feet; length, 7,400 feet This canal is managed by a private corporation, and the officers are Jesse Spaulding, president; William E. Strong, assistant secretary and treasurer; E. S. Miner, superintendent.

A DISPATCH from Liverpool to Mr. Anderson, agent for the White Star Line, notified him that the White Star Line's Teutonic was launched from the Queen's Island yard in Belfast. Its length is 582 feet, making it the longest vessel afloat; its breadth is 57 feet 6 inches, and its depth is 39 feet 4 inches, with a gross tonnage of nearly 10,000 tons. It is built of Siemens-Martin steel, and will be propelled by two independent sets of triple expansion engines, driving twin propellers with maganese bronze blades. The hull is minutely divided by athwartship bulkheads, with a longitudinal bulkhead running fore and aft through the greater portion of its length, giving additional rigidity and strength, and greatly increasing the security in the event of collision. It has two funnels, and will have but three large taunt pole-masts, without yards, the application of the twin screws rendering the larger amount of sail power supsrfluous.

MR. CANTOR introduced a bill in the Senate for establishing a state naval militia. It provides that whenever an enrollment of persons subject to military duty is made there shall also be an enrollment of all seafaring men engaged in the navigation of lakes, rivers, and other waters, and all engaged in the construction and management of vessels. There shall be a voluntary enlistment of three battalions of the naval-reserve artillery and one battalion of the naval-reserve torpedo corps. The organization and discipline shall be patterned after the naval branch of the Federal government. When the national government is ready to furnish facilities, the governor is authorized to carry the programme into effect.

ENGALND to-day pays a total of $4,000,000 in subsidies, and by that means she gets $365,000,000 of the $665,000,000 paid for the carrying trade of the world. There is such a thing in America as being "penny wise and pound foolish," and the question of "subsidies" for the great carrying trade of the world and the decision of American statesmen upon it puts us on the "penny" side.

A Paris special says: The first issue of the new shares of the Panama canal comapany by the banque Parisienne will amount to 30,000,000 francs. A second issue will be made only in case of necessity. The new company obtains all the rights and privileges of the old concern, including the right to issue lottery bonds. The original holders will receive 80 per cent. of the net profits after the new company shall have been remunerated.

THE VESSEL OWNERS.

The Vessel Owners' Association held their annual meeting yesterday in the office of Mr. M. A. Bradley. The attendance was very large. Mr. H. M. Hanna presided, and Mr. B. L. Pennington filled his place as secretary of the association. The latter presented his annual report covering the work of the organization during the past year. He stated that the membership in the association now represented eighty-three steam and eighty-eight sail and consort vessels, a total tonnage of 147,850 tons. This was a larger showing than ever before represented by the organization. The secretary also stated that in addition to the regular expenditures of running shipping offices, nearly $2,000 had been expended in securing beneficial legislation in the shape of light-houses, signals, the marking and removal of obstructions, etc., and in preventing obnoxious or legislation detrimental to the interests of navigation such as was proposed by the Detroit bridge scheme, etc. At the conclusion of secretary Pennington's report a motion was made and carried re-electing all the old officers, including the several shipping masters, as officers and shipping masters for the ensuing year. The list is as follows: president, H. M. Hanna; vice president, H. P. Lillibridge; secretary and treasurer, B. L. Pennington; council, Harvey D. Goulder; shipping master for Cleveland, A. R. Rumsey; assistant shipping master for Cleveland, Fred Bennett; shipping master for Ashtabula, William Rennick. An advisory board was elected as follows: Messrs. H. M. Hanna, P. G. Minch, George P. McKay, Thomas Wilson, H. P. Lillibridge, R. K. Winslow, M. A. Bradley, J. H. Palmer, John W. Moon, W. D. Rees, W. C. Richardson and James Corrigan.

A communication was received from Toledo requesting that the association establish a branch office at that port. This matter was referred to the executive committee with power to act. The following resolution was also offered and adopted at the meeting:—

Resolved, That it is the sense of this meeting that the necessities of commerce at this port require the opening of the old river-bed.

Resolved, That the president appoint a committee of three members of this association to co-operate with similar committees of the Board of Trade, with the municipal and federal authorities, and with committees of any other associations for the furtherance of the project.

The following is the committee appointed: Messrs. Harvey H. Brown, W. D. Rees, and R. R. Rhodes. Attention of members was called to the annual meeting of the Lake Carriers' Association, to be held in this city this week, in the Board of Trade rooms. The latter association will convene on Wednesday at ten o'clock.

KEYS TO LAKE NAVIGATION.

ERIE, PA, January 22.

Editor of Marine Record.

I have read with much interest the discussion in your journal on the location of the St. Clair ship canal, and wondered what object there was behind it; for of a certainty every sensible man knows that it lies wholly wtthin Canadian territory, and none better than the Dominion authorities.

It was an axiom with the late Lord Beaconsfield that "Men are governed best through their imaginations," and perhaps applying it to an economical consideration the Canadians are willing that the Yankee shall spend money where its expenditure is so largely to their advantage as in the case of the construction of a canal and maintainance of light houses.

If Colonel Fox outwitted our Congressmen when he procured the appropriation for the dredging of the channel mentioned in an article published by you some time ago, he failed to do so with the Kanuck, and certainly the canal is not to the westward of that cut. What about the lime kiln cut in the Detroit River? Is that not wholly within Canadian waters, and is not Malden and Boisblanc the key to the commerce of the lakes? Aye! aye! sir! the Dardanells of North America; the most valuable stragetic position along the frontier and the possession of which is the Gibraltar of the inland seas.

Canada holds this important key and the purport of her building locks at the Sault is to strengthen her position; these advantages with her continental railroad facilities are a net work by which in time lake commerce and the trade of the Pacific Ocean, with Australia, New Zealand, Japan, and China will be hers; when completed the fate of the "Great Eastern" will be confronting the fleet of vessels published in your last issue.

No more money ought to be expended by our government in improving waterways wholly Canadian until assurance is obtained by treaty that they will be regarded as neutral under all conditions.

ABRAHAM J. LOUCH.

The man who purchased a seal-skin overcoat early in the fall to show his confidence in his friend, a weather prophet, is still sweating over his investment.

LAKE CARRIERS' ASSOCIATION

TO CONSIDER AND TAKE ACTION UPON ALL GENERAL QUESTIONS RELATING TO THE NAVIGATION AND CARRYING BUSINESS OF THE GREAT LAKES AND THE WATERS TRIBUTARY THERETO, WITH THE INTENT TO IMPROVE THE CHARACTER OF THE SERVICE RENDERED TO THE PUBLIC TO PROTECT THE COMMON INTEREST OF LAKE CARRIERS AND PROMOTE THEIR GENERAL WELFARE.

BOARD OF MANAGERS, 1888.

THOMAS MARTIN	Oswego, N. Y.
JAMES ASH	Buffalo, N. Y.
W. BULLARD	Buffalo, N. Y.
S. D. CALDWELL, President	Buffalo, N. Y.
E. T. EVANS	Buffalo, N. Y.
W. P. HENRY	Buffalo, N. Y.
P. P. MILLER	Buffalo, N. Y.
FRANK J. FIRTH, Vice President	Erie, Pa.
M. A. BRADLEY	Cleveland, O.
H. M. HANNA	Cleveland, O.
THOMAS WILSON, Vice President	Cleveland, O.
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EBEN WARD	Detroit, Mich.
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JOS. AUSTRIAN	Chicago, Ill.
W. M. EGAN	Chicago, Ill.
IRA H. OWEN, Vice President	Chicago, Ill.
R. P. FITZGERALD	Milwaukee, Wis.
DAVID VANCE	Milwaukee Wis.
ALEX MCDOUGALL	Duluth, Minn.
FREDERICK ALMY, Secretary	Buffalo, N. Y.
JAS. CAREY EVANS, Treasurer	Buffalo, N. Y.

MARINE RECORD—OFFICAL PAPER.

THE LAKE CARRIERS ASSOCIATION.

The members of the Lake Carriers Association held their fourth annual meeting in the Board of Trade room on Wednesday. A large attendance was noticable, and many important resolutions were brought beforo the members, and voted ubon. Vice president Thomas Wilson called the meeting to order, after which B. L. Pennington read the address of the president of the association, S. D. Caldwell. The first subject brought under discussion was the wrecking laws, and after a short consulation on the measures already applied, the subject was laid over, awaiting the action of the Canadian Parliament.

The president's report on the Chicago river bridge regulations, the Sault Ste. Marie lock, and the Inland Lloyds classification of vessels, were brought before the notice of the members and elicited a few remarks but no further action was taken.

The bridging of the Detroit river was next brought before the notice of the members, and the unanimous sense of the meeting was directly opposed to any scheme of bridging the Detroit river. James W. Millen, of Detroit, spoke at some length in favor of the bridge, and pressed the point that no decided obstruction to navigation would occur. However, several other prominent marine men showed clearly the advisability of having the river unobstructed by piers, or other artificial appliances. M. A. Hanna quoted statistics that proved there was a greater amount of merchandise passing through the Detroit river in twenty-four hours, during the season, than through any other similar waterway in the world. W. Livingstone, Jr., also advanced some telling arguments in opposition to the scheme, and spoke of the transport service and tunnel service as being sufficient for the requirements of any private corporation, and while the federal government were so willing to appropriate large sums of money to remove natural obstructions, the idea of placing artificial ones in the direct path of naviga ion was suicidal to the commerce and prosperity of the whole northwest. Captain Henry did not think the river wide enough now and would not by any means make it narrower than it was. Captain Millen denied the charge that he had any railroad interest in the bridge scheme; his interests were all in vessels. A vote was finally taken and the following resolutions unanimously adopted:

WHEREAS, There are now pending before congress two bills, each having for its object the authorization of a railroad bridge across the Detroit River, both of which bills and the structure proposed under each have been carefully considered.

WHEREAS, Previous attempts to obtain permission to bridge Detroit River have led to exhaustive investigations and full discussion of the subject, which have demonstrated that the necessities of lake commerce through the river require its unobstructed use for navigation.

Resolved, That the objections to bridging the Detroit River increases with the growth of the lake marine.

Resolved, That the lake shipping commerce growing out of and keeping pace with the wonderful development of the Northwest has reached a point where the unobstructed navigation of the narrow strait is essential, teeming as it does, with a volume of commerce greater than that through any other waterway in the world.

Resolved, That the people of this country, East and West, exchanging their products in bulk by the lake route, are so interested in the question of cheap freight rates between the East and the West and Northwest, have an interest in keeping this river open to the free navigation of every craft, an interest outweighing any merely local interest in the matter, and more worthy of recognition and encouragement than any project of a limited number of individuals or a few corporations for their private gain.

Resolved, That no bridge low enough to interfere with or obstruct the free passage of any part of the river should be built, and that piers in the river should not be tolerated since any piers in any part of the river must encroach upon and obstruct navigation of the river by vessels, large or small.

Resolved, That this association, basing its action solely on a sincere, well-defined cause, and certain that the actual necessities of lake commerce are pressing in this matter, that it would be unwise and unjust to obstruct the river to any extent, and believing further that the requirements of railway traffic can be perfectly, fairly and reasonably met and accommodated without a bridge, hereby most earnestly protest against all such attempts to reverse the wise and liberal policy of the government of making generous appropriations for the removal of obstructions from our important waterways and therefore earnestly protest against the authorization of the schemes now pending for bridging Detroit River.

Resolved, That the secretary be directed to send copies of these resolutions to all members of Congress representing lake districts and to our attorney in Washington.

The officers who have so well served the association during the past years were re elected, with the exception of the secretary, Mr. Murphy, whose other duties require all of his attention, and Mr. Millen, of Detroit, whose views on artificial obstruction of navigable waterways did not seem to meet the approval of the members of the association. Following is a list of the new officers:

President—S. D. Caldwell, Buffalo.

Vice presidents—Frank J. Firth, Erie; Thomas Wilson, Cleveland; P. P. Miller, Buffalo; Ira H. Owen, Chicago.

Secretary—Frederick Almy, Buffalo.

Treasurer—Jas. Carey Evans, Buffalo.

Board of managers—Thomas Martin, Oswego, N. Y.; James Ash, Buffalo, N. Y.; W. Bullard, general manager Union steamboat company, Buffalo, N. Y.; S. D. Caldwell, general manager western transit company, Buffalo, N. Y.; E. T. Evans, general manager Lake Superior transit company, Buffalo, N Y.; W. P. Henry, general manager Lehigh Valley transportation company, Buffalo, N. Y.: P. P. Miller, Buffalo, N. Y.; Frank J. Firth, President anchor line, Erie, Pa; M. A. Bradley, Cleveland, O.; H. M. Hanna, Cleveland, O.; Thomas Wilson, manager Wilson's line, Cleveland, O; A. W. Colton, Toledo, O.; J.W. Millen, manager Detroit transportation company, Detroit, Mich.; Eber Ward, Manager Ward's D. & L. S. line, Detroit, Mich; James Davidson, Bay City, Mich.; Jos. Austrian, general manager L. M. & L. S. T. company, Chicago, Ill.; W. M. Egan, Chicago, Ill.; Ira H. Owen, Superintentent Escanaba & Lake Michigan transportation company, Chicago, Ill; R P. Fitzgerald, Milwaukee, Wis.; David Vance, Milwaukee, Wis.; Alex. McDougal, Duluth, Minn.

FORCES OF NATURE.

It has been estimated that an average of five feet of water falls annually over the whole earth. Supposing that condensation takes place at an average height of 3,000 feet, the force of evaporation to supply such rainfall must equal the lifting of 322,000,000 pounds of water 3,000 feet in every minute, or about 800,000,000 horse power constantly exerted. Of this great energy a very small part is transferred to the waters that run back through rivers to the sea, and a still smaller fraction is utilized by man; the remainder is dissipated in space.

SHEBOYGAN, WIS.

To the captains and vessel owners: The tug Sheboygan, owned by Groh Bros., of Sheboygan, is one of the finest and best tugs on the shores of Lake Michigan, and is permanently stationed at this port for general wrecking and towing. Special attention paid to wrecking jobs or to any disabled vessels. Prices lower than any other tug on the lakes. The tug Sheboygan is fully equipped with 8-inch new lines, steam pump, etc., for wrecking work. Captains all know that Sheboygan is noted for the largest number of vessels windbound on Lake Michigan, and when off this port show your signal and you will have prompt reply from the tugs, as there is plenty of water in our harbor and river, 15 to 18½ feet, and towing prices very low. Don't forget to come into this port and save your property and get out of a severe storm or gale.

Meteorological summary for the week ending January 22, 1889:

Mean barometer	30.07
Mean temperature	31.0
Mean humidity	77.0
Total precipitation	.34
Prevailing direction of wind	West
Total wind movement	23.30
Average cloudiness	5.9
Average state of weather	Cldy
Max. temperature, (highest)	55.2
Min. temperature, (lowest)	12.9

W. H. HARMON, Sergeant Signal Corps.

AN EPISODE.

A very pleasant wedding occurred Monday evening at the residence of Mr. and Mrs. Ernst, No. 13½ Creighton street, when their daughter Sadie was united to Mr. Frank Mayer. Rev. H. Eppens performed the ceremony in the presence of a large circle of friends. The best man was Mr. Ed Austin and the bridesmaid was Miss Eva Voght. A wedding feast followed and the presents were numerous and beautiful. The RECORD answers:

Along your pathway may flowers be strewn.
All blushing and sweet as the roses of June.
May health, pleasure, and wealth your life-picture blend,
Is the wish and fond hope of your RECORD friend.

We take pleasure in recommending the Mount Olive Erasive Liquid, manufactured by Captain D. A. McLachlin, for cleaning varnish and painted articles without injury to the polish. Price 40c per gallon. Address the Captain at No. 633 Trumbull ave., Detroit, Mich.

[Around the Lakes Continued from 1st Page]

BUFFALO, N. Y.

What a pity it was that Buffalo failed to secure the third shipyard that was all but started, so as to enter more directly into the wholesale shipbuilding now under way on the lakes. But her boiler-shops are doing a tremendous business if there are not shipyards enough here to keep them going. The government inspectors report that more pieces of boiler plate are now coming in for testing than ever before. No less than eighteen samples were received yesterday.

Vessel sales are still reported almost daily. David Vance & Co., of Milwaukee, have sold the schooner Moonlight to Captain William S. Mack and others, of Cleveland, for $28,000. She was built in Milwaukee in 1874, measures 738 tons, and rates A2. She is said to have earned over $9,000 net last season.

There seems likely to arise a question as to who is responsible where one vessel is injured by another in a storm, with everything tied up for winter. The propeller Germanic, for instance, in swinging down against the Cuba, broke two or taree of her stanchions and otherwise injured her, and the stern of the propeller Passaic was crushed as she lay in Coit Slip. While the owners of the injured vessels maintain that the others must pay the damage it is learned that the owners of the agressors are talking about manifestations of Providence.

ST. CLAIR, MICH.

The Toledo and Saginaw Transportation Company is about to pass out of existence. The shipyard at this place, the steamer which is now being constructed, and the steamers Miami and Pawnee have been sold to Messrs. Curtis & Brainard, who were the leading stockholders in the old company; the steambarge C. F. Curtis, and barges Fassett, Reed and Holland, have been sold to N. C. Holland and others, of Buffalo; the steambarge Tempest, and barges Brainard and Orton, to Thomas Lester and others, of this city, and the barge Dayton to J. A. Ward and M. P. Lester. It is probable that the Troy and Edwards will be sold before this issue is out.

The steamer E. M. Foster has been hauled out at Holland's yard, and the work of rebuilding her will be commenced at once.

Dr. McDonough and Wm Dawley are making a trip to Wallaceburg, Dresden and Chatham in the yacht Stella.

The work of planking the new steamer at Holland's yard will probably be completed this week.

Captain Richard O'Connor, of St. Clair, was in the city Monday evening on business.

Frank Smith, the grocer, has purchased of Captain Glass, his interest in the barge Gawn.

It is reported that Robert Holland will commence the construction of another steamer at his yard as soon as the one now building at that yard is launched, and that Mark Hopkins and E. C. Recor, of St. Clair, will be interested.

DULUTH. MINN.

Special to the Marine Record.

The tug Ella G. Stone, from Two Harbors, made port at Duluth. There was a little frost out on the lake, but otherwise a more beautiful day could not be had. At 5:45, with two of Osborn's sand scows in tow, which she had cut out from the thin bay ice, she cleared again for Two Harbors and had a placid and pleasant moonlight sail home. The scows will be used on the new docks there. In the afternoon two men started down the north shore in the Shamrock, a small boat, with fishing supplies for Grand Marais. Communication with Grand Marais at this time of year is generally had by sledges, but this year is different.

Monday the head of the lake was shut in by thin ice which looked as if it had come to stay, but when the weather cleared yesterday morning blue water was again seen. This lake business might be put down as the last of last season or the first of this, but as the returns for 1888 are made up it will be entered as the first arrival and departure of 1889.

L. G. Moran has begun work on building a small harbor tug, about 50 feet long, which he proposes to have ready for business at the opening of navigation.

TOLEDO, OHIO.

Special to the Marine Record.

Captain Al. Fitts, who last year commanded the steambarge Monohansett, will this season commafid the new steamer being built to run between this city and Perrysburg, a point up the river about ten miles.

Captain Henry Donaldson, of Marine City, will sail the Monohansett the coming season.

Harlow Brothers have purchased the steambarge Michael Groh from Michigan City parties, on private terms. Her insurance valuation is $9,000. It is reported that Harlow Bros. paid about two thirds of that amount. She carries 325 thousand of green lumber. Was thoroughly rebuilt in 1882; received new boiler in 1883; and new 20 by 22 engine in 1884. She will be put in the lumber trade—running alone—between Lake Huron ports and Toledo, and will be commanded by Captain Win J. Harlow, who last year sailed the Frank C. Leighton. Harlow Bros. and Captain Ben Calhoun, who sails the Montana, are the owners of the schooners mentioned.

M. M. Ingalls, a very well known and one of our best posted pilots, was buried from his late home in this city last Sunday.

The bids on the straight channel work will not be opened until February 5th.

The marine engineers' ball was a most pleasant and successful affair in every way.

Will report in a later issue the sales of several barges.

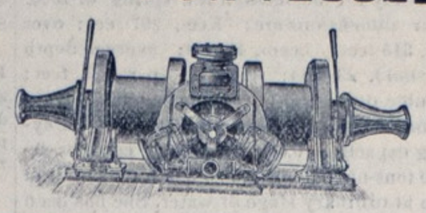
The George G. Hadley, the steamer built by Davidson and launched under the name of Majestic, was purchased by George H. Ketcham, (not J. V. Ketcham, as you stated in your last issue), Captain Charles Hubbard, and George G. Hadley. For some reason or another you did not publish the item in regard to her, that I sent.

The George G. Hadley has two Scotch type boilers 11½x13 allowed 150 pounds of steam. Her engines are tripple expansion 20x33x54 and 42 inch stroke.

The river and bay are frozen over.

C. O. D.

R. DUNBAR & SON,
—MANUFACTURERS OF—
Hoisting Engines, Single and Double Drums
FOR VESSELS & DOCKS.



Accompanying Cut shows our Double Drum Hoister, operated by ONE engine. Two hatches can be unloaded at once. Two machines in one, at low cost. Send for descriptive circular.

R. DUNBAR & SON,
BUFFALO, N. Y.

PORT HURON, MICH.

Special to the Marine Record.

Captain Alex. Sinclair, formerly of the Oscoda, has purchased Captain Fish's interest in the steambarge Kalkaska. Captain Sinclair will sail her next season.

Captain Stewart, last season of barge Middlesex, will command the new steamer Idlewild next season.

The barge Ida Corning is receiving new ceiling and other repairs at Dunford & Alverson's dry dock.

The tug Porter is also receiving a good rebuild at the same yard.

Captain George Ryan has been appointed master of the steambarge Oscoda.

Mr. Cowing, of East Saginaw, is in this city looking after his vessel interests.

The Phenix iron works are compounding the tug Porter engines.

Fitzgerald's dry dock iron works are full of business at present.

Captain Grummond, of Detroit, was in this city yesterday looking after captains for his tugs.

Captain Van Camp has hauled the old sunken schooner Owatta out at Well's mill. He will rebuild her for a tow barge.

The work on the tunnel under St. Clair river at this port is getting along good. There are 150 men at work on it at present.

Mr. Henry Howard, the tug owner, left for California Monday to spend the winter.

Robert Holland, of Marine City, will rebuild the steamer E. M. Foster for Mr. Carpenter, the coal dealer.

Mr. Morley, the big shipbuilder of Marine City, has presented Lynn, the marine reporter, with a very fast ice boat.

A. W. Selkirk has rented the big dock foot of Butler street for five years. The Cleveland steamers all stop at that dock.

H. B. Buckrudge will manage Captain Grummond's business at this port next season.

Mr. Mason and Captain Madden, of East Saginaw, are in the city looking after the C. H. Green and consort.

The Phenix iron works shipped the engine for Holland and Pringle's new barge to Marine City yesterday.

The weather is very fine for this time of the year. There is hardly any snow here.

Charles Danger, with a gang of United States government surveyors commenced to survey Black River at this port yesterday. The government intends to make ten feet of water to the upper railroad bridge.

Many friends of Captain Frank Holland, of the steambarge Porter Chamberlin, will be glad to hear that he is getting along good. The doctor says he will probably get the use of his eyesight in about two months.

CLAYTON, N. Y.

The St. Lawrence is at last frozen over and sleighing good.

The steamer Magic is to be sold at auction March 13. A good boat for some one; capacity 112 tons.

Engineer F. J. Rees, with his family, left Tuesday for West Bay City, where he has the work of putting the machinery in the new boats being built by F. W. Wheeler for the Delta Transportation Company.

Engineer W. C. Gould, of the Raleigh, has returned to Chicago after a short visit with his friends here.

The shipyard here is full of small craft, but nothing has been done yet in the way of repairs.

Vessels laid up here are Montana, Polly M. Rogers, Hartford, Cornelia. GOULD.

SHEBOYGAN, MICH.

Special to the Marine Record.

Riebalt, Walter & Co., shipbuilders, are building for Donahue & Melendy, and Captain John Cochrane a steambarge 200 feet keel, 218 feet over all, 35 feet beam, 12 feet hold. She will have have a fore and aft compound engine 24 and 42 by 40, and a skel boiler 8 by 14, and will be used in the lumber trade. They are also building two tugs 76 feet over all, 17½ feet beam, 9 feet hold, for the Milwaukee tug boat line. One of them will have an engine 22 by 24 by Sheriff's Vulcan Iron Works, and a boiler 8 by 14. The other will receive an engine 18 by 22, now in the tug Starke Brothers, and boiler 7½ by 13. One of the tugs is well forward and is a splendid, strong built good looking tug. The schooner J. H. Holmes was in the boxes and received a thorough rebuild. She has been lengthened six feet aft, spread out one foot and raised eighteen inches, and is all new from the bilge up. She is now 110 feet keel, 26½ feet beam, 9 feet hold. Her rebuild will cost about $8000. The steambarge John Otis will receive new steel arches ¾ by 14, all new keelson, part new ceiling, new deck and rail. The schooner Vega will be recalked all over. The schooner Sardinia is to receive a new fore mast and general repairs. The schooner Reuben Doud has received new keelsons, frames forward and aft, part new floor, center board base, knight heads and skern post Two of Truman & Cooper's dump scows are hauled out for a rebuild. The schooner Elva is receiving new deck frames and decks. The schooner John Mee had her decks and top sides calked. The schooner Eliza Day had her decks calked. The schooner Nancy Dell received new stanchions plank shear and rail and some outside plank.

The vessels laid up at this port are: Steambarge, John Otis; schooners, Reuben Doud, Vega, Lottie Cooper, Lilly E., Evening Star, Sardinia, John Mee, C. Amsden, Joe Dawal, Eliza Day, Lydia E. Rasser, H. D. Moore, John L. Green, Elver, Day Spring, J. H. Stevens, Jessie Winter, C. Gordon, Island City, Dawn, Petrel Abbey, Walaska, Nancy Dell, Exchange, Walter Smith, Eliza Mary, Chriskann. scows, J. A. Johnson, Talahassee; towing tugs, Sheboygan, Fred Nelson fishing tugs, Fred Koehn, Welcome, Carry Mathers, Fred Kersie, Hoffmung.

A meeting of the stockholders of the Sheboygan tug company was held at the St. Clair hotel. Fred Oetking was elected president, vice president, Captain Duncan Buchnan, resigned; Anton Nelson was elected director, and the old officers to hold office as before. The affairs of the company were discussed and good business having been done during the past season, the stockholders had good reason to be well satisfied, a handsome dividend having been declared.

Lieutenant was here recently, inspecting the new life saving station just completed. It is situated on the north side of the narbor just inside the pier and is a very fine building. Captain T. D. McBride, captain of the life saving station, is greatly pleased with his new residence and will get the boats and other life saving appliances fixed up in it at an early date. WILLIAMS.

Work in the shipyard is progressing finely with a force of over 100 men. The first tug is planked and ceiled and is waiting for her machinery. The second tug will be in frame this week and ready for her machinery in about three weeks. Twenty-five frames of the new large steambarge are already up. Since work was commenced on her she has been sold to Geo. N. Stray, a banker, and the Danaher & Melindy Lumber Co., of Ludington, and Captain John Cochrane, of Milwaukee. Her estimated cost complete is $67,000.

Captain Ole Anderson, formerly of the schooner Starke has purchased Captain John Cochrane's one-quarter interest in the steambarge Colin Campbell.

Captain D. Buchauan has sold his one-qnarter interest in the schooner Stampede to D. Gibbs for $1,000.

OGDENSBURG, N. Y.

Steamboating on the St. Lawrence evidently pays. The Island Wanderer Company, after spending $32,000 in repairs, etc., last year, are free from debt, and declare a dividend of 4 per cent on the stock.

Captain S. V. Anderson has recovered from his late illness and returned to Brockville to take command of the steamer Belleville.

As a result of the late storm the steamer Ella Ross lies at Deseronto in water up to her upper deck.

The steamer Magic will be sold at auction March 13, at the Hubbard House, Clayton.

DETROIT, MICH.

Captain Packard, of Sturgeon Bay, has sold the steamer Sam Neff to J. M. Jones, Jr., of this city, for $6,500.

CANADIAN MARINE ASSOCIATION.

At the meeting of the Canadian Marine Association at Toronto, Captain Gaskin the president in the chair, Mr. R. Williamson moved, seconded by Captain Thomas Donnelly, "that this marine association take into consideration the advisability of appointing one or two men in central places to do all chartering." Mr. Myles moved that a committee be appointed to consider what action should be taken to obtain a better mode of chartering. This was carried.

The committee appointed were S. Neelon, Captain S. Sylvestor, J. B. Fairgreave, D. G. Thompson, Captain C. G. Myles, Captain Gaskin and Captain Crangle.

The committee, in submitting their report, said that they do not think it advisable to make definite rates of freights, but request that the following brokers be appointed and vessels going to these ports be placed into their hands to make the best charters they possibly can, the owners reserving the rights of chartering themselves if able to do as well or better: Finn Bros., Chicago; J. T. Rose, Duluth; Charles Norton, Detroit; T. J. Southard, Toledo; Warner & Becker, Cleveland. They also request that the wages tariff for steamers for 1889 be the same as was in force in 1888.

The report was carried without discussion.

The committee appointed to draw up a list of the lighthouses and fog whistles needed then made their report and recommended:

That the Marine Association recommend the government to—

1—Place range lights to lead into the lower harbor of Kingston until the shoals in the harbor are removed.

2—A fog whistle on Point Peter (or Long Point), the False Ducks and Port Dalhousie, Lake Ontario.

3—The (Dummy) Point Pelee, Long Point, and Colchester Reef, Lake Erie.

4—Range lights to enter anchorage at Parry Sound.

A buoy on the 11-feet spot on the range between Knap's Point and Point Henry, River St. Lawrence. Your committee also recommend a better sysrem of buoys on Lachine Lake and one or two points on Cotesu Lake; also, the entrance to Valleyfield should be better buoyed.

The committee don't think a lighthouse on Murry tow necessary.

The report was adopted without discussion.

The next resolution was withdrawn on account of opyosition. It was moved by Captain Tripp and seconded by Captain Donnelly: That this association do appoint a committee or deputation to wait on the government for the purpose of urging the necessity of passing an act to have all marine cases tried in the courts, to be tried by a jury of competent marine men.

Mr. H. J. Livingston then addressed the meeting in regard to the scheme of mutual insurance among vesselmen. He explained at great length his ideas and showed the many advantages to be derived from it. Mr. Livingston intends to apply for a charter from the Ontario legislature, and hopes to find the association in working order by spring. A board of directors has been chosen who will attend to the details of the organization.—Toronto Empire.

CARGO LIBELLED.

The goods that were rescued from the Starucca have been libelled by the owners of the steamlighter Menter and the Reid towing and wrecking company of St. Ignace. The goods as is known are now in charge of the Union Dock and Coal Co. The papers have been served on that company after which they will be filed with the clerk of the United States court at Marquette. The value of the goods hled by the Union Dock and Coal company is estimated at $15,000. The claims of the owners of the Menter and the Reid company aggregate about $8,000. It is the desire of the plaintiffs to bring about an immediate sale of the goods, if possible. It is understood the Detroit safe company is anxious to have the safes returned and have written to Sault ste Marie to learn how much it would cost to have them taken from the dock to the depot.

CELESTIAL PHENOMENON.

A remarkable aurora was observed at Rochester N. Y., last Saturday evening. It consisted of a vast circle of white light, its center near the zenith and the circumference passing over the moon. Streamers reached up to it from the north. The diameter of the circle was about 75 degrees. At 7:45 o'clock a similar circle of shorter diameter formed. It also passed across the moon. As the moon rose still higher, another circle formed of still smaller dimensions, still passing over the moon, center removing at zenith. The approach of the moon toward the zenith seemed to regulate the size of the circle. The semi-diameter of the circle was on each occasion the distance from the zenith to the moon.

It is said that a new scheme for harbor defense is soon to be tried. Perforated iron pipes will be sunk in the water, and through them petroleum will be forced. In this way a fierce stream of blazing oil could be sent down on the enemy's fleet to drive it away. Iron vessels could not pass through this lake of fire, because it could be made to extend many miles along a river.

It is proposed to expend $100,000 in improving the navigation of the Humber river and in building wharves and elevators at its mouth, five miles west of Toronto.

THE STEAMER GEORGE G. HADLEY.

Messrs. Geo. G. Hadley, Geo. Ketcham and Captain Charles Hubbard arrived home Wednesday night from Bay City, at which place they purchased the largest wooden steamship on the lakes. She was built by the well known shipbuilder, Captain James Davidson. Consideration, $150.000.

She is to be named the George G. Hadley. She was launched last November, and will be ready for business in the spring of 1889. Her dimensions are: Keel, 297 feet; over all, 315 feet; beam, 41 feet; average depth of hold, 23 feet; shallowest part, 21 feet; double deck; eight working hatches. Government measurement, 21,060 tons. Carrying capacity, 10,000 bushels of corn, or 2,800 tons of coal or 2,500 gross tons of iron ore at ordinary stage of water. She has been pronounced by experts the finest model and strongest built ship on the lakes. She has three steel arches on the outside of her frames, one inside, on each side; steel keelson, in addition to the wooden keelson, fastened through and through sister keelson. The steel keelson runs the entire length of the steamer, and is one inch thick by 18 inches wide. She has all the latest improvements in the way of steam steerer, steam capstan, forward and aft; steam windlass, steam pumps, triple expansion engines of the most recent make. Her cabins are fitted up in the most convenient way, with all conveniences of latest style. Her pantry and other rooms are first class in every way. All the rooms are finished with antique oak and hard woods. The gentlemen named above are negotiating for two more boats after the same pattern, to be put in commission this year. They are shrewd, farseeing business men, and the purchase of the boats to be added to the Toledo fleet will be appreciated by Toledoans. The great steamship, which Messrs. Hadley, Ketcham and Hubbard have just added to the Toledo fleet is attracting much attenton in all lake cities as well as admiration in Toledo. Well it might, for it is one of the finest steamships on the lakes. The following letter was received by the owners from one of Toledo's leading firms of artistic decorators: Messrs. G. G. Hadley, George H. Ketcham and Charles Hubbard: We view with pleasure the fact that in the purchase of the "George G. Hadley" you have again demonstrated to the country the fact that Toledo is justly entitled to the position of a great shipping port of the lakes, and as firm believers in that fact, and desiring to manifest our cordial wishes that your royal craft may ever bear a royal cargo, we desire to present to her equipments and owners a pair of carved and gilded signs befitting the balance of her mammoth proportions. Send us your measure. Yours very respectfully, ALLEN & PARKHURST.

It is needless to say the generous offer was accepted.

PROPELLING CANAL BOATS.

A Frenchman has invented a new system for propelling canal boats. It consists of an endless cable running along the two banks. The boats are moved at double the ordinary speed, and can readily be attached to and detached from the cable.

THE HEIGHT OF OCEAN WAVES.

A writer in the Liverpool Mercury—a captain of the mercantile marine—has taken great pains to take what are probably the most careful observations as to the height of ocean waves in a gale which have ever been recorded. He made them during a voyage round Cape Horn and to do it he went up in the main rigging, to get, if possible, the top of the wave coming up astern in a line of sight from the mast to the horizon at the back. The reason he selected the mainmast was this, that as a rule it is nearly amidships and when the sea is running the sea ahead and from aft lifts the two ends, forming a hollow amidships (the actual foot of the wave below the mean draught equal to the sight elevation) and the observer necessarily is above the true height. It was a difficult operation, but the captain obtained some good observations, marking the height of the waves on the mast. On measuring the distance from these to the main draught he found them to be as follows: 64, 61, 58, and 65 feet respectively, varying in length from 750 to 800 feet.—New York Home Journal.

LIGHTS FOR GEORGIAN BAY.

Mr, Dawson, M. P., had an interview with the Minister of Marine, in which he urged an increase in the number of lighthouses on the north shore of the Georgian Bay, to keep pace with the growing increase in lake traffic. Mr. Dawson testified that the hydrographical survey of the bay was giving great satisfaction. Mr. Dawson also saw the Deputy Minister of Railways and urged the granting of a subsidy for a line of railway from some point in the township of Denison, Ont., on the Algoma branch of the C. P. R. R., to the lake shore opposite Little Current, Manitoulin Island, with the view subsequently of bridging the channel, which, at this point, is only 900 feet wide, and then extending the line through Manitoulin Island. The proposed line on the mainland would be about thirty miles long.

There are now cables on almost every sea and ocean bed, the total length of wire laid being nearly 113,000 nautical miles, with the first that was laid dating from 1858.

THE PRESIDENT TO ARBITRATE.

A dispute having arisen between Nicaragua and Costa Rica, in relation to the situs of the proposed Nicaragua canal, the American minister to Guatemala some time ago was instructed to use his good offices to bring about an understanding between the two governments. The following dispatch from him was received at the Department of State today:

GUTEMALA, January 17.

Secretary Bayard, Washington:—

Convention between Nicaragua and Costa Rica to arbitrate questions affecting the Nicaraguan canal was signed at 1 o'clock. The President of the United States is named the arbitrator. HALL.

DIXON'S

GRAPHITE

PIPE JOINT GREASE

FOR STEAM OR GAS PIPES

makes a perfect joint that can be opened with ease in three years or thirty years. Bolts, screws, etc., smeared with this grease will not rust even in the dampest places. Write to Jos. Dixon Crucible Co Jersey City, N. J., for circulars.

FOR SALE,

STEAM BARGES—Two barges, vessels, and tugs. Also a side-wheel steamer, iron hull, allowed to carry 325 passengers. For information and particulars address,

DAVISON & HOLMES,
234 South Water st., Chicago, Ill.

FOR SALE.

MARINE ENGINE nearly new, includes bilge pump, hand pump and force pump, cylinder 17 by 20. Will sell cheap. Address.
K. BOX, Record Office.

FOR SALE.

HARBOR TUG for sale, cheap. This tug is in good repair and will be sold cheap, for cash, that is, $4.600. Engine 18x20, boiler 5 feet 6 inches by 11 feet, and allowed 100 pounds of steam. For further particulars inquire at 113 Franklyn avenue, Cleveland, O. CAPT. E. DAHLKE.

FOR SALE.

FISHING TUG suitable for light towing, New, In service but four months. Engine 9 by 10. Hull 48 feet long 11 feet beam. First class in every respect. Address,
H. BOX, Record Office.

FOR SALE

TWO MARINE BOILERS 7 years old in good order for sale cheap, 9¾ feet shell by 16 feet long for $1,000 each, ¼ down balance one year, by
C. H. LANE, BUFFALO, N. Y.

FOR SALE.

BARGE COL. BRACKET—She carries 260M feet of lumber, 420 tons of coal. Had $900 worth of repairs last season. Fit out good. Price $1,600. Mention this paper. ED. J. KENDALL, Port Huron.

FOR SALE—
THE TUG C. D. McKINNON. Her hull and machiner are in first class order; measurement, 11 tons; engine 14x16. Carries 100 pounds of steam and is a useful boat. Apply to LOUIS LEMON, 303 Atwater st., Detroit, Mich.

FOR SALE.

STEAM BARGE PASSAIC, and four consorts. Capacity, 3,300 tons coal or 2,400,000 feet timber. Boat now laid up at Buffalo. For terms and price, inquire of J. M. JONES, 52 Griswold St., or C. C. BLODGETT, 242 Woodbridge St., Detroit, Michigan.

FOR SALE.

THE OWNER of a one third share in a fine handy steambarge 200 tons net, wishes to dispose of his interest. She is in good order and condition, and was doing work up to the middle of December. Her present valuation is $13,000 classed B 1. For further particulars, inquire, MARINE RECORD, Cleveland, O

FOR SALE.

PASSENGER PROPELLER GOLDEN EAGLE, Thoroughly over hauled this spring, "Sutton" Engine 14×14, 100 pounds steam, runs 14 miles an hour easily, and carrys 500 people. Owner has no route for her and will sell for what she is worth.
JAMES E. ENGLISH.
East Saginaw. Mich.

FOR SALE.

THE FINE FRAME BUILT scow Kate Grant, is offered at $950. She is only eight years old, and cost $2,800 to build. She has been well salted, and taken care of, and is now in perfect condition. Any one requiring such a bottom would do well to inquire for farther particulars to her owners.
CHARLES L. WINNE & CO. Port Clinton, Ohio.

FOR SALE.

SCHOONER FRANC MINER. Her dimensions are as follows: 68 feet keel, 17 feet beam, 5 feet hold, she has two masts and is three years old, in good shape, outfit and all. I also have a complete outfit for a tug or barge, engine 18 by 20. boiler 6½ by 14, shaft wheel and all complete. For particulars write to L. NAU, Green Bay, or CAPTAIN J. A. CUSICK, Fort Howard, Wis.

FOR SALE—
A HANDY THREE-MASTED SCHOONER, well found and equipped, will carry 500 tons of coal, or 270 M feet of lumber. Rates, A 2½.
Also, a two-masted schooner; capacity, 425 tons of coal, or 250 M feet of lumber. Rates, A 2½.
Both these vessels have been well kept up and are most desirable investment. Apply to PARKER & MILLEN, Detroit, Mich., or to THE MARINE RECORD, Cleveland, O.

FOR SALE OR EXCHANGE.

FOR STEAMBARGE, A NEW PASSENGER steamer, will carry 75 tons freight, allowed 115 passengers. Will sell on easy terms or exchange for steam barge. Address, BOX 90. Petosky, Michigan.

TUGS FOR SALE.

PATHFINDER; Length 78 feet, beam 16 feet, depth 8½ feet, draws 9 feet. Rebuilt from the keel up in 1884. Is an extra fine looking boat and an excellent sea boat. Boiler 7 feet by 13 feet, built of ½ inch steel in 1887, and allowed 107 pounds steam. Engine is an extra smart 20 by 20, in perfect condition. Has copper steam and exhaust pipes. Engine was over-hauled and lined up last winter. She is an extra good towing boat, a fast runner and is very economical, in fact she is a complete tug boat.

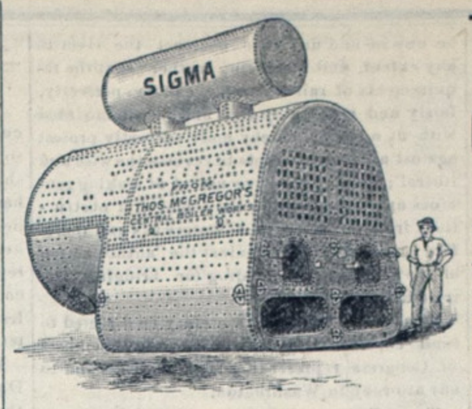
W. H. DOANE, Length 50 feet, beam 12 feet, draws 7 feet 8 inches. Built in 1881. Boiler and hull rebuilt last winter. Boiler 4½ by 9 feet, allowed 110 pounds steam. Engine 14 by 14. Received new crank shaft and wheel and was over-hauled and lined up in October. Is a very handy little boat. Both boats are bargains. Reason for selling; we want to get out of the tug business and buy an interest in a steambarge. For prices and further information, address,
HARDY BROS. Toledo, Ohio.

WANTED.

SCHOONERS—20 to 40 tons, in good repair. Send full description and photo or drawing. Address,
B. C. LINDLEY,
Box 479. Traverse City, Mich.

WANTED—TO BUY TWO TOW BARGES of about, 500,000 capacity, or two A 2 schooners. Address, CAPTAIN A. FLAGSTAD.
Montague, Mich.

WANTED—A GOOD SECOND HAND MARINE ENGINE not smaller than 16x16 nor larger than 18x20. Address, with full particulars and bottom price, E. W. HASKIN, East Saginaw, Mich.



Thomas McGregor,
CENTRAL BOILER WORKS
MANUFACTER OF
Marine and Stationary
BOILERS,
—ALL KINDS OF—
Rendering Kettles, Tanks,
—AND—
SHEET IRON WORK.

WANTED.

A GOOD MARINE ENGINE, 20x22, with or without boiler, etc, Address box 1, branch office Marine Record, 252 South Water st, Chicago, Ill.

WANTED.

TUG ENGINEERS—Four first-class engineers from 25 to 35 years of age. Good wages to good men, who must give recommend from last employer. None need apply who are looking for a soft job. Apply to the DUNHAM TOWING & WRECKING CO., 234 South Water st.

UNITED STATES ENGINEER OFFICE, DETROIT, Mich., January 19, 1889.—Sealed proposals for excavating a lock pit for a new lock at St. Mary's Falls Canal, Michigan, will be received in triplicate at this office at 2 p. m., February 18, 1889, and then opened. Preference will be given to materials and plant of domestic production or manufacture, conditions of quality and price (import duties included) being equal. Attention is invited to acts of Congress approved February 26, 1885, and February 23, 1887, vol. 23, page 332, and vol. 24, page 414, statutes at large. The government reserves the right to reject any or all proposals. For further information apply at this office or at the U. S. Engineer office, Sault ste. Marie, Michigan. O. M. POE, Col. of Engineers, Bvt. Brig. Gen. U. S. A.

Notice to Vessel Owners.

I HAVE CUSTOMERS FOR several barges, both steam and tow, and would be pleased to hear from each and every owner having vessels for sale, giving name, capacity, draught of water, light and loaded. If steam, condition and age of boiler, size of engine, etc. Correspondence solicited direct from owner, as I will not divide commission. Address,
J. F. WHITTEMORE.
Agent and Ship Broker. Bay City, Mich.

Shipyard for Sale or Rent,

THE LOOMIS SHIPYARD AT ERIE PA., IS OFfered for sale or rent, including all materials tools and good will. A first class opening for a ship carpenter with moderate capital. Terms to suit purchaser. If not disposed of as a whole, will sell tools, materials, etc., in lots to suit. For inventory, terms etc., apply at MARINE RECORD office, or to D. L. HUBBARD, Erie, Pa.

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EUROPE!

By all first-class Steamship Lines at lowest rates. Call on or address,

A. J. JACKSON.

100 Public Square, CLEVELAND, OHIO.

FOR SALE.

Two Tugs and Three Marine Boilers.

Tug Uncle Sam.

Length 60 feet, beam 14 feet, depth 7 feet, draft 8 feet, engine 17 by 17; steel boiler 12 feet long, 5 feet 4 inches diameter, of ⅜ths plate, allowed 100 pounds of steam. Hull rebuilt in 1887. Price $5000.

Tug J. C. Ingram,

Length 54 feet, beam 15 feet 6 inches, depth 7 feet, engine 17 by 18, boiler 10 feet long, 5½ feet diameter, of ⅜ths plate, allowed 60 pounds of steam. Rebuilt in 1885. Price $5000.

A Marine Steel Boiler,

17 feet long, 7 feet diameter, allowed 110 pounds of steam, 6 years old, in good condition; price $800.

A Marine Iron Boiler,

14 feet long, 7½ feet diameter, allowed 80 pounds of steam, in good repair; price $400.

Marine Iron Boiler.

14 feet long, 5½ feet diameter, allowed 90 pounds steam, in good condition; price $300.
Apply to
DUNHAM TOWING & WRECKING CO.,
234 South Water St., Chicago, Ill.

HENRY ESCH,
Groceries and Provisions,
Fresh and Salt Meats,
DRY GOODS AND CLOTHING.
Special attention given to vessel supplies.
Corner of Jay and 9th st. Manitowoc Wis.

FOR SALE.

TUG BOAT, STEAM YACHT, &c.
—AT—
Bell's Steam Engine Works,
BUFFALO, N. Y.

1 new Wooden Tug, 76 feet long, 15½ feet beam; engine 18x20, steel boiler 6 ft. 8 in. by 10 ft. 9 in.
1 steel and iron Steam Yacht 85 feet long, 14 feet 4 inches beam; compound engine 9x18, 12 in. stroke, independent condenser, with boiler all complete.
1 wooden steam yacht, "Little Mac," 60 feet long, 10½ feet beam; engine 8x9, Scotch steel boiler, 2 masts, and furnished all complete.
1 marine engine 10x12.
1 marine engine 14x16.
1 marine engine 11x14.
Apply as above, January, 1889.

Travelers' Information Bureau.
Ocean, Lake and Railroad
TICKET AGENTS
224 Bank St.,
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ROBERT E. HILLS,
57 & 59 North Wells St., Chicago, Ill.
Telephone 3321.
STEAM FITTING AND HEATING,
Wrought Iron Pipe & Fittings
ENGINEER'S SUPPLIES.
General Jobbing Work Done Promptly.
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SPECIAL EXPERIENCE IN DESIGNING, PRICES SELF-TRIMMING HATCHES COAL SHUTES AND BLAKE'S PATENT BOILERS.
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156 River-st., Cleveland, Ohio
No one should leave port without a box of M. M. Glekler's marine cigars.

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DIVING APPARATUS
140 CONGRESS ST. BOSTON.

Scott's New Coast Pilot
Second Edition, Revised and Enlarged,
With new Maps and Illustrations corrected to the opening of Navigation in 1888,
IS SOLD BY
SHIP CHANDLERS
AND BY THE PUBLISHER,
GEORGE SCOTT,
AT 162 LARNED ST., E. DETROIT, MICH.

River Machine Co.,
[Successor to G. R. GALE,]
171 River St., Cleveland, Ohio,
Are prepared to Manufacture and do General Repairing on Marine Engines and all other Machine Work.
We have also a full line of pulleys and shafting and are prepared to do all kinds of Stone quarry Work.
TEARE, WIGHT & CO.

J. C. GOSS.
Sail Maker and Rigger,
20 and 22 Woodward Av.,
DETROIT - - MICH
LARGE STORAGE ACCOMMODATION FOR VESSEL OUTFITS.
Covering Boilers and Steam Pipes a Specialty

STEAMBOAT EXPLOSIONS.

Two appalling disasters, within a few hours, and after an examination so long that steamboating had come to be looked on as quite as safe as life on land, have naturally set all our old pilots, captains and travelers to giving their reminiscences. I note two curious facts, the first that steamboat explosions and other disasters on the Mississippi appear to run in sets, quite a number coming in rapid succession; and the second, that in many of the worst cases no satisfactory reason can be assigned.

While not a steamboat man, I have several times voyaged from the head of navigation on the Mississippi to its mouth, and was at one time familiar with all its noted passenger steamers. And noting the fact that explosions appear to come in groups, I have suspected that the state of the atmosphere had some mysterious influence. There is no "science" in this—it is only one man's guess. Or it may be that a certain number of boats started on their career about the same time, and so their "constitutions" wore out about the same time.

Once in a long time you will meet an old pilot whose recollections begin with the Helen MacGregor, which exploded at Memphis some fifty years ago. The cause of the explosion was plain. The steamer lay broadside to at the Memphis landing while the river was falling fast; the result was that her shore side was hard aground, and she was careened so that one boiler was almost empty, while the other was nearly full. The fires had been kept at their highest for some time, preparatory to making a start, and when she was worked off and took her level, the water rushed into the empty and overheated boiler; the result was the instant creation of an excess of steam, and an explosion which tore all that end of the boat to splinters and instantly killed every person near.

About 1840 the great "boom" of New Orleans began, and by 1855 it had reached its culmination. This was the era of "racing" on the Mississippi. Those were the days when we heard so much of "lamming in the rosin," "try some tar," "break open them lard barrels and heave it in," "give her more, more," "nigger roosting on the safety valve," etc. Of course frightful accidents resulted; the newspapers ran a crusade against racing, and the more conservative era of steamboating came in.

Steamboat travel on the lower Mississippi, which had always been a pleasure, then became a poetic delight which roused the enthusiasm of visitors from all lands. And it was and is peculiarly American. Our art and our great public buildings are too often poor imitations of foreign models; but the Thompson Dean, the Richmond, the Great Republic and their handsome rivals are purely original. Their architecture, from "Texas" to boiler deck, is peculiarly American, and is almost the only form in which appears a perfectly original American system.

Of course the owners of such high priced craft employ only the most thorough engineers, the most skillful pilots; and so the danger of accidents is reduced to a minimum. There is really more danger from snags than explosions. Travel on the lower Mississippi is to-day the safest of all American diversions—averaging passengers and casualties. Even base ball is more dangerous, if ardently pursued.

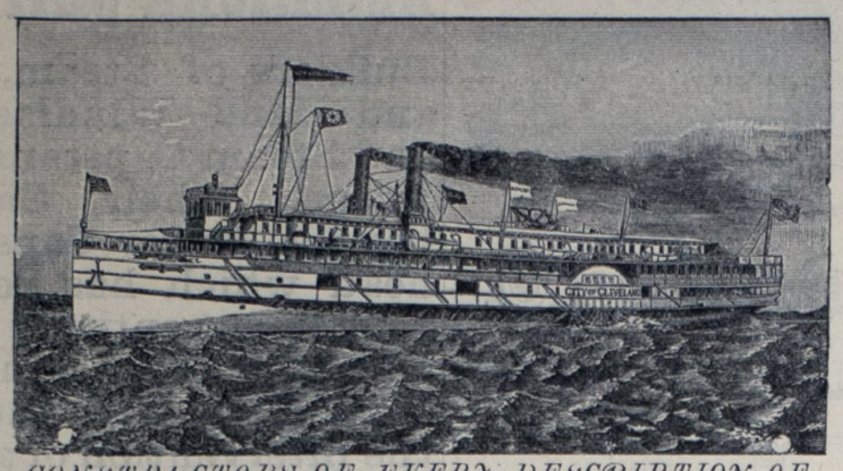
The work of Mississippi steamers during the war has employed a thousand pens, but I have often wondered that so little was said of the steamer Sultana. At any other time it would have been the sensation of the year and made the ears of all who heard it tingle. But what did the loss of 1,400 men amount to in April, 1865? On the 21st of that month the Sultana reached Vicksburg with crew and passengers to the number of 110. There she was boarded by 1,996 soldiers and thirty-five officers, nearly all just released from southern prisons, many suffering from disease and wounds, but all overjoyed at thoughts of peace and home. At 2:30 a. m. of the 27th, when eight miles above Memphis, her boiler exploded without warning and more than half of those on board were instantly hurled into eternity. She was carrying more than five times her capacity, and the men were huddled together on every part of the boat. In a few minutes she was wrapped in flames, the survivors were afloat in the great river, and of the 2,141 on board only 780 were afterwards rescued, 1,355 having perished. It is a thrilling experience even now to hear one of the survivors tell of that night.—*Oswego Palladium.*

The Escanaba & Lake Michigan Transportation company has been incorporated at Marine City, with a capital stock of $250,000.

CATARRH CURED.

A clergyman, after years of suffering from that loathsome disease, Catarrh, and vainly trying every known remedy, at last found a prescription which completely cured and saved him from death. And sufferer from this dreadful disease sending a self addressed stamped envelope to drofessre S. A. Lawrence, 212 East 9th st., New York will receive the receipt free of charge.

DETROIT DRY DOCK CO.,



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MINING MACHINERY AND

PROPELLER WHEELS,

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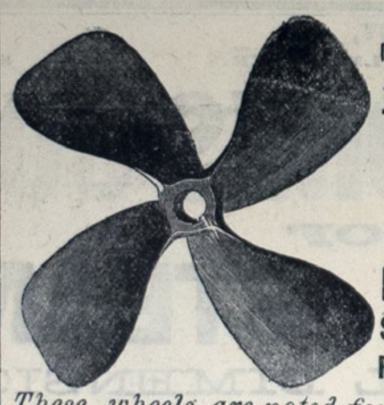
BUFFALO, N. Y.,

MANUFACTURER OF



Triple Expansion Marine Engines,

Three Cylinder and Fore and Aft and Steeple Compound Marine Engines,

High and Low Pressure Engines

SECTIONAL PROPELLER WHEELS,

PROPELLER, TUG & YACHT WHEELS

These wheels are noted for their extra speed and towing power or aproportionate saving of coal.

PRICES QUOTED ON APPLICATION.

BOSTON & LOCKPORT BLOCK CO.,

SUCCESSORS TO BAGNALL & LOUD BLOCK CO. and PENFIELD BLOCK CO.

BOSTON, MASS., and LOCKPORT, N. W YORK.,

The Largest and Most Reliable Manufacturers in the United States of

TACKLE BLOCKS.

Their Specialties are: Self-Lubricating Metaline Blocks: Self-locking Link Snatch Blocks: Self-adjustable Five Roll Roller Bush Blocks; Loud's Patent Non-chokable Diaphragm Pumps will pump Sand, Gravel, etc., without injury to the Pump, having no plunger. Easiest Working Pump in the Market

OUTFITS FOR VESSELS A SPECIALTY.

We make the most durable grade of Blocks to be obtained in the market Call for our SELF ADJUSTABLE FIVE ROLL ROLLER BUSHED STAR BRAND BLOCKS AND DO AWAY WITH REPAIRS.

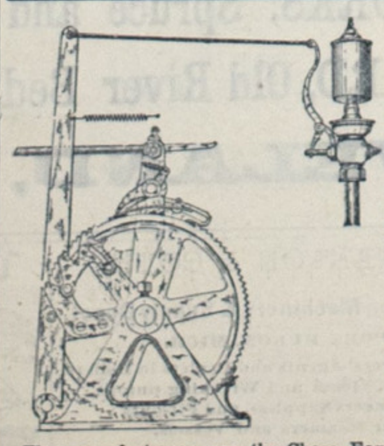
ARTHUR & BOYLAN,

Steamboats, Tugs, etc, Coaled Day and Night.

DEALERS IN LACKAWANNA ANTHRACITE COAL.

Woks: Ft. West River St., Whisky Island, C. P. R'y. Slip, Government Pier

OFFICE 130 RIVER-ST., CLEVELAND, OHIO.



The manufacturers are the Chase Fog Whistle Machine Co., corner of Elm and Spruce streets, Cleveland, O.

Chase Fog Whistle Machine

This machine has been placed on the following steamboats during the past year: SPOKANE, WALLULA, KASOTA, CHARLEMAGNE TOWER, JR, YAKIMA, MISSOULA, SITKA, FAYETTE BROWN. R. J. HACKETT, FOREST CITY, SPARTA, HAVANA, VIENNA, OSCAR TOWNSEND, CITY OF CLEVELAND HENRY CHISHOLM, SUPERIOR, E. B. HALE, M. B. GROVER, J. S FAY, R. P. RANNEY, SMITH MOORE, CHARLES J SHEFFIELD, IRA H. OWEN, CAMBRIA, CORSICA, J. H. OUTHWAITE, SAMUEL MATHER, R. R. RHODES, COLUMBIA, AURORA, OHIO, WM. EDWARDS, S. E. SHELDON, AUSTRALASIA, RALEIGH, BULGARIA, ROUMANIA, J. F. EDDY, HIAWATHA, THOS. ADAMS, A. P. WRIGHT, GLADSTONE, E. P. WILBUR, SOO CITY, E. M. PECK, ROBERT L. FREYER AND NORTHERN LIGHT,

To the President and Board of Supervising Inspectors of Steam Vessels:

Your committee to which was referred the "Chase Fog Whistle Machine" beg leave to report: "That we have carefully examined the same and find that it blows at regular intervals, being worked by the engine, thereby insuring regular and continuous blasts for any length of time that may be required and wo .. recommend it or similar device to owners of steam .. is as an additional safeguard to navi to.

H. S. LUBBOCK,
GEO. H. STARBUCK,
W. D. ROBINSON, } Committee.

TOLEDO, OHIO. MONTPELIER, OHIO. } OAR MILLS

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MANUFACTURERS AND IMPORTERS OF

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CHAINS. ANCHORS, OARS. BLOCKS

COTTON AND FLAX DUCKS, FLAGS

BUNTINGS, RUSSIA BOLT ROPE;

MARINE HARDWARE AND SHIP-CHANDLERS' GOODS GENERALLY.

Nos. 34 AND 35 SOUTH STREET, NEW YORK.

TESTED CHAINS.

Bradlee & Co., Empire Chain Works

BEACH AND OTIS STS., Philadelphia.

Ship's Cables and Marine Railway Chains.

Chains for Foundry Cranes and Slings.

"D. B. C." Special Crane Chains.

Steel and Iron Dredging, Slope and Mining Chains

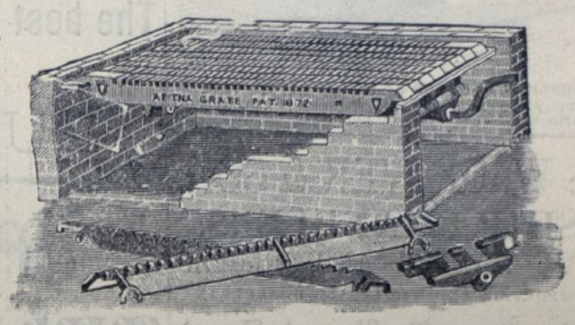
THE ÆTNA GRATE.

G. C. BARNES, Agt.

This Improved Shaking Grate Especially Adapted to Burning Slack.

Glob Iron Works, manufac's.,

Office and Foundry, corner of Elm and Spruce-sts., CLEVELAND, O.



H. B. & G. B. BURGER,

Ship-builders and Contractors.

MANITOWOC DRY DOCK.

Dry Dock will admit Vessels of 1100 tons drawing 12 feet. Have also a set A Boxes in connection with the Ship yard capable of lifting Vessels of 350 tons. of large stock of SPARS CONSTANTLY ON HAND.

VESSELS DOCKED AND REPAIRED ON REASONABLE TERMS.

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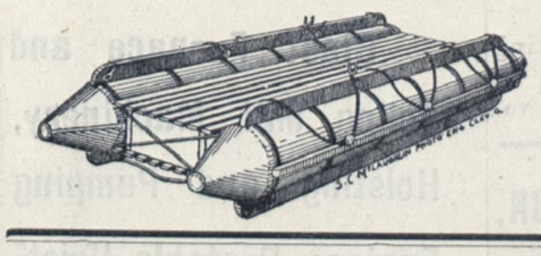

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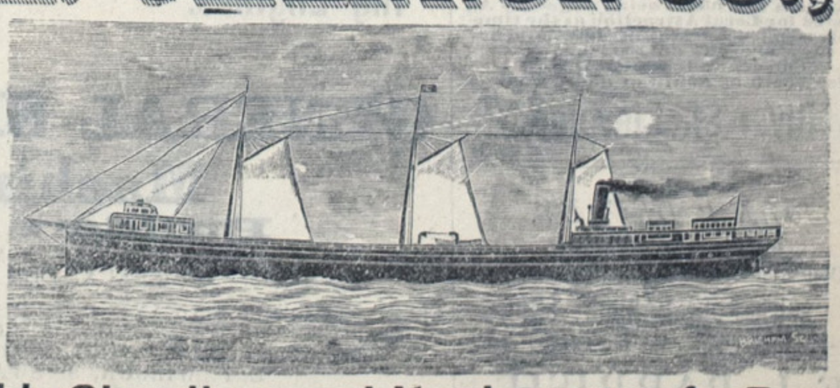

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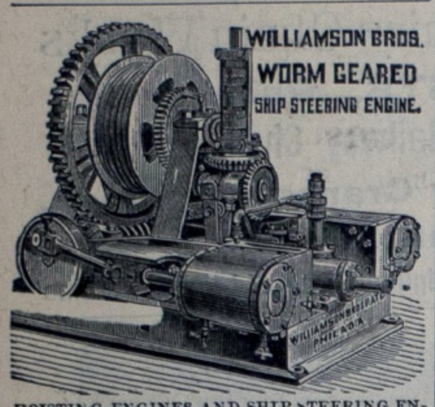

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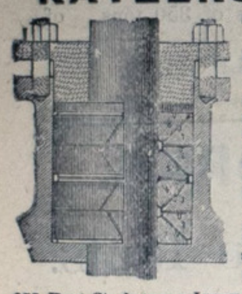

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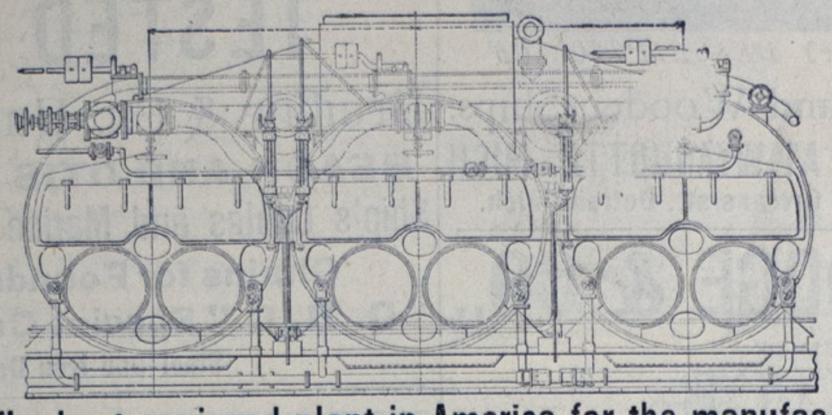

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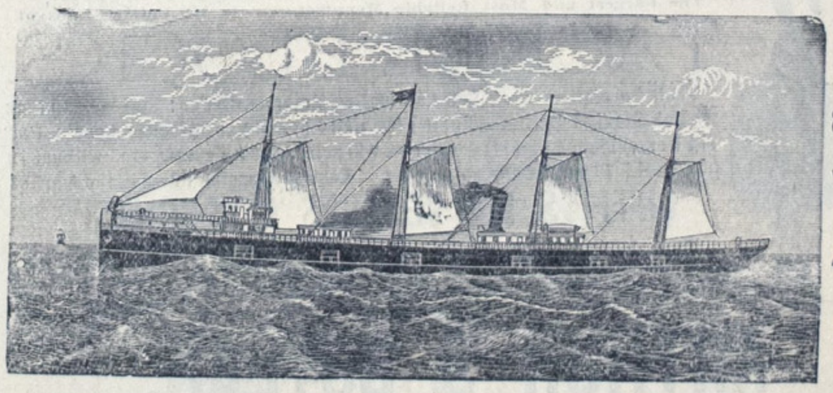

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